Canadian Journal of
PUBLIC HEALTH

VOLUME 47 TORONTO, NOVEMBER 1956 NUMBER 11

Health Programs of the Future[1]

G. J. WHERRETT,[2] M.D., M.R.C.P., F.R.C.P.(C)

QUITE frequently, when speakers appear on programs such as this, they begin by saying, "When I was asked to give this paper . . ." I may as well confess that I wasn't asked to give this paper—at least not until I had warmed the idea up a bit myself. I did so because it seemed to me that the fitting time and place for me to assemble for the record the ideas and feelings I have concerning the future of public health would be here in New Brunswick, where the first Minister of Health was appointed in 1917, and where I first became associated with public health work.

I do not claim originality for the ideas I advance, because many of them I owe in part to some of you in this audience, and to fellow-workers who are not here. During the past twenty years, my work has involved travel to all parts of this country. This has meant hundreds of opportunities to discuss public health problems with public health people. There are many of you here with whom I have exchanged ideas scores of times—so don't be surprised if you hear your own views coming back at you. Like Ulysses, "I am a part of all that I have met". Ulysses, I always gathered, thought it was a good thing and so do I. It has been a great privilege to have, as it were, a ringside seat for observation of the development of public health programs in each of the provinces, as well as in the national field.

What a story there is in the growth of public health in this country! What varied, commanding and engaging personalities have played their part among the cast of characters. Let us hope the story is written before it is lost in the mists of antiquity—but let me resist the temptation to give long excerpts at a time when a studious and calculating look should be taken at the future—which is quite enough for one paper.

[1]Presented at the forty-fourth annual meeting of the Canadian Public Health Association held in the Admiral Beatty Hotel, Saint John, New Brunswick, May 29–31, 1956.

[2]Executive Secretary, Canadian Tuberculosis Association, Ottawa.

Those of us who have been dealing with the major health problem, tuberculosis, have had the unique experience of working with such people. This has enabled us to watch with interest three important developments which have occurred over the years. *First* is the change which has come about as to what constitutes public health in this country. Formerly, it was little more than sanitation and the control of infectious diseases; now it takes in the whole field of health, including health care. *Second* is the change in the status and importance of the health officer. He not only has, or should have, a technical and professional staff to supervise his basic problems such as sanitation, infectious disease control, child and maternal hygiene, but he is now finding that all health problems, including hospital and medical care, will be on his doorstep if they are not already there. This means that he has become the key person in the medical picture of the future. *Third* is the growth of voluntary health agencies of almost endless variety, which have come into being over a short period of time.

I would like to outline some opinions and impressions gained in our experience of tuberculosis control which have some bearing on the changes I have mentioned. It is my hope that these may be of some value to the public health field in dealing with the tasks ahead and may point to some way of overcoming problems in connection with the last of these, the phenomenal interest which the public is taking in health.

The first important point is that it has never been possible to confine a disease such as tuberculosis to a narrow specialty. In dealing with the tuberculosis problem, we have touched at many points on the various phases of a complete health program. It is an infectious disease with complicating environmental factors. Problems of diagnosis and treatment require clinical training and judgment. The development and direction of institutions and clinic services constituted an administrative problem and these had to be co-ordinated into provincial and national programs. It is also of interest that the economic problem of treatment costs led to the first plan for prepaid health care in Canada—first through voluntary pools in Saskatchewan and later by prepayment through taxes.

As a result, personnel who received training in the tuberculosis field have gone on to important positions in the fields of medicine and surgery, public health and hospital administration. Their training has made them "socially conscious", as well as "lesion conscious".

As the plan developed it has touched fields of nearly all personnel having to do with health and welfare—the clinician, the laboratory worker, the health officer, the industrial physician, the public health nurse, the health educator, the social worker and the rehabilitation officer. There has been a mental health aspect of the problem, as we have been dealing with a dangerous and fatal disease which has brought out resources of courage and fortitude in individuals based on good mental balance and adjustment, or the opposite.

Why was the tuberculosis campaign eminently successful? I believe the main reason is that it was a true partnership of the official and voluntary agencies. It brought into being the first of the voluntary health associations—the Canadian Tuberculosis Association—which stated in the first article of its

constitution that it was to provide a means by which the medical profession and the public could unite in combating this disease, which at that time was the greatest cause of death. This has never been lost sight of and in all matters of policy, medical advice has assisted lay planning in policy-making. There has also been a bridge between clinical medicine and public health, in that both phases of medicine have participated fully. The general practitioner has always found the greater proportion of cases, while public health personnel have provided diagnostic and treatment services. Public health personnel have supplied the leadership necessary to keep voluntary effort effective and on the target.

In this partnership of official and voluntary effort, we have learned that co-operation is a two-way street. There are thousands of interested people public-spirited and willing to play their part in the work of an organization. They required, were entitled to, and generally received, the leadership, advice and the continuing interest of the physicians, both clinical and public health. Where leadership, interest and advice are available, the health officer has found allies ready to provide the help needed to carry out the program. There need be no complaint of laymen meddling in health matters where there is such co-operation.

There is probably no point at which the official agency has not benefited from the presence of its voluntary counterpart. Professional competence and good government services are essential in any program. But these can only go so far without public support, both as to their introduction and their continuation.

It has been demonstrated many times that it is necessary to plan and work with people if we are ever to develop effective and competent health services. At every step of the way the public needs to be taken into our confidence. When we fail, it is often because the proper ground work has not been laid. This can often be done by educational efforts carefully and quietly organized, rather than high pressure publicity campaigns. Too often we try to introduce new measures by legislation before sufficient ground work has been done. Then we wonder why these projects backfire. This is the sort of thing that leads us into the holding of plebiscites on health projects. These can be dangerous, because it is a sudden death campaign in which cranks and demagogues are allowed full sway, while sounder advice may not be brought out at the time. We have had these problems at many points in dealing with tuberculosis, such as the building of sanatoria, the introduction of free treatment for indigents, pasteurization of milk and the tuberculin testing of cattle. In most instances these are now part of our legislation, recognized and publicly approved without any question.

The example of campaign followed by the Canadian Tuberculosis Association has been copied by many others, with the result that we now find a multiplicity of campaigns having to do with every disease entity or morbid condition to which the flesh is heir or prone to develop.

What a list!—tuberculosis, venereal disease, mental health, cancer, poliomyelitis, cerebral palsy, disseminated sclerosis, diabetes, myopathies, leukemia, heart disease, accidents, deafness, blindness, alcoholism, arteriosclerosis, and

when we run out of disease entities, we even take on food campaigns and vitamin societies have been formed to promote the use of dietary regimens and vitamin complexes.

The presence of this plethora of campaigns is a good indication of the keen interest in health matters that is taken by our people. It is the sign of an interested and informed democracy of individuals, ready to play their part in doing things for themselves, rather than depending on governments to do everything for them.

These societies and campaigns have been organized by sincere individuals who desire to help in solving health problems which to them are real and important. They seek to provide the means whereby the public can assist the medical profession in the treatment and prevention of morbid conditions which cause disease, death or undue unhappiness.

But this great tendency to organize so many societies creates some problems and a full realization of the difficulties inherent in the operation of voluntary groups is necessary. We cannot expect to go on multiplying such organizations indefinitely. Neither can we expect to duplicate the type of organization in each instance. The tuberculosis association has found that it was necessary to have proper organization—national, provincial and local. The question of securing enough volunteers to form the branches and operate the programs is a problem. If offices and staff are maintained, this means overhead. Yet, we realize that without provincial and local branches to carry out the program in the communities of our country, the program is likely to be ineffective and to fail in its objective.

I mention this problem at this time because I believe it needs the attention and advice of the medical officer of health. This mid-century official should be the health leader in the community and his domain should be the whole field of health. As an example, he should share with organized medicine and the public, responsibility for all health and hospital plans that may be introduced. Leadership will be required from all three groups if the services are to operate for the benefit of recipients and those who will provide the services. Some realization is necessary on the part of each as to their privileges and responsibilities.

The health officer should have some responsibility in regard to the multiple health organizations now existing or likely to come into being in the foreseeable future. It is obvious that there need to be more health surveys such as the morbidity survey of the Department of National Health and Welfare. The result would be more co-ordination of program planning. An overall health program requires the recognition of the relative importance of those different health problems. At present there is a tendency to give top priority to causes emotional in their presentation, while other less dramatic diseases and disabilities, which cause a great deal of suffering and unhappiness, are forgotten or neglected.

It seems obvious that some of these campaigns and organizations could be combined, provided there was the will to do so and the foresight to see that each received its due share of money and effort required for the combined program which would result.

So far, any attempt to bring about amalgamation has been on the fund-raising level. I feel that this is the wrong end from which to start. There is greater need for a survey of health needs and co-ordination of programs than for fund-raising. As long as there is a program to be carried on, and it is properly presented to the public, response will be forthcoming. Wherever there is an attempt to dictate causes the public must support, human nature will naturally oppose it.

At the present time, no one is taking responsibility for the solution of this problem. No organization such as the National Health Council of the United States exists in this country. The Dominion Council of Health, which is more interested than any other, while it is serving a very important function, would find it impossible to undertake such a task, as it is a statutory body responsible for providing advice for official departments as to health policies of national and provincial importance.

I believe that the function of combining such organizations could be served by the Canadian Public Health Association with the co-operation of other national bodies, provided we have the vision and courage to undertake it. Finances and staff would be forthcoming if the task was outlined. While the Canadian Public Health Association is mainly responsible for maintaining professional standards and stimulating education and research on the part of its member groups, I feel that it could extend its influence wherever possible to help and advise the many voluntary health agencies which, in seeking to solve their own problems, are part of the complete health picture.

These are some of my ideas and opinions. What further action could be taken? I believe the Canadian Tuberculosis Association and, I am sure other major voluntary organizations, would be glad to join with leaders of the Canadian Public Health Association to discuss these problems and, if possible, set up some co-ordinating body. Health Councils have not developed to any extent in this country. These may be the answer to many of our problems on any level of government.

Arnold Toynbee has expressed our present-day concept of a total health program. He has said that "the 20th century will be remembered chiefly, not as an age of political conflicts and technical inventions, but as an age in which human society dared to think of the whole human race as a practical objective". Such a concept in any country will require more planning and co-ordination than exists at present.

The Human Side of Public Health[1]

B. H. McNEEL,[2] M.D.

THIS paper was originally intended to discuss the personal element in public health practice, and the way in which the quality of the interpersonal relations involved in it either increase or decrease its effectiveness. I was thinking of the people involved rather than the pathogenic organisms, the physical environment, the tests, the protective measures and the statutes. I was about to classify the people in public health practice as the producers and consumers, but on second thought, the producers and the consumers are the same people—the public. You and I as public health agents do not produce health except perhaps when we immunize people against disease. For the most part we either persuade or force the people who constitute the public to take measures to produce health or to prevent illness.

In the meantime, my own thinking has been led into a by-path by reading a recent issue of the British Medical Journal which is devoted almost entirely to a discussion of medical education. I ask your indulgence for a minute to follow this by-path. No doubt you have noted the increasing frequency with which medical writers and speakers refer to the philosophy of medicine and advocate broader training of medical students to enable them to appreciate the varied aspects of the whole broad field of human activity and experience. At the same time, there is often reference to the expanding field of medical knowledge which has already become too extensive for any individual to grasp. This truly presents the doctor with a dilemma and one which on the face of it is insoluble.

However, on closer examination the philosophy to which reference is made appears to be, not so much a body of knowledge and a formulation of ideas, but rather an attitude and a concept. The attitude involves the qualities which we find in the true scientist—a continuing curiosity and desire to learn, keen observation, and a contemplative search for the meaning of all that he observes. This involves giving weight to common observations, intuitions and even to old wives' tales as well as to what we call scientific facts. I suspect that any old wives' tale or old wives' remedy which has been universally accepted over a considerable period of time has some virtue in it and requires re-examination. I would also say that at times our intuitions are more to be trusted than allegedly scientific formulations which have not been adequately tested. When we consider some of the rigid formulations for infant care that were considered to be scientific in the twenties it seems surprising that all children were not injuriously affected. No doubt many were protected by the independence of mothers who followed their maternal instincts

[1]Presented at the fourth annual meeting of the Ontario Public Health Association, Toronto.
[2]Director, Community Mental Health, Ontario Department of Health.

rather than following rigid schedules and medical prohibitions. Others were no doubt spared by the wisdom of family physicians who were not bound by one-sided formulae, no matter how authoritative.

The attitude that any aspect of human behaviour and experience may be grist to the mill of understanding eventually leads to the concept of the interaction of human functions. We artificially break man down into his biological, psychological and social functions but they are interdependent. The personality change which accompanies a head cold and the physical symptoms which accompany anxiety may be transient and therefore not noted but they are nevertheless observable.

We have recently emerged from an era in which the medical view of man was that of a walking collection of organs or a carrier or potential carrier of disease. We are, perhaps, near the end of an era where the medical view of man is of a purely biological organism developing along relatively fixed lines and only assisted or hindered by his physical environment. The era of social medicine is well underway although its full impact has not yet been felt. Cultural and interpersonal influences are being recognized along with diet, sanitation and other material influences as factors affecting not only the function but also the development of the human being in mind and body. There is even evidence of the revival of an old and supposedly unscientific concept in a sentence in one of the articles I have mentioned "Man is spirit".

One of the most hopeful indications of a new medical philosophy is in the changing attitude toward the handicapped with a shift in emphasis from the liabilities to the assets and from the disability to the residual potential, not just residual function but residual potential.

Many of you have been trained in fields allied to medicine but not in medicine itself. However, the philosophy we have been talking about is just as important for you as for medical personnel. The devoted pursuit of an understanding of human beings is as broad a field of interest as it can possibly be. It is actually the process of acquiring a liberal education, for no field of endeavour is foreign to it and understanding can be gleaned from literature, history and ordinary observation as well as from more technical studies. The process is always interesting, sometimes exciting, and there is no person and no situation that cannot teach us something.

An understanding of the human side of public health should help you to influence the health of people in two ways:

(a) indirectly by obtaining the co-operation of people in carrying out health programs,

(b) directly by influencing attitudes and feelings which affect development, health and efficiency.

In the first category we may think of the attitudes of individuals or groups toward programs of sanitation, tuberculosis control, venereal disease control, immunization, etc. When we run into opposition in the execution of such a program it might be profitable to seek the reason for the opposition rather than to set out to overwhelm it by argument, pressure or legal action. We cannot take time now to list all the possible reasons for opposition though I would suggest that you might do so in some idle evening. As a starter we might

think of fear or anxiety. Some possibilities are obvious. The hard-up operator of a small business may be anxious about the cost of installations required by health authorities. The farmer may be distressed at having a herd of cattle condemned. The child may be afraid of needles and unduly influence his parent. The bread-winner who has to go to a sanitorium may worry about how his family will fare while he is away. On the other hand he may be worrying about how he will fare when he is away from his wife, or about other interests that she may develop, or about the possibility of never returning.

Allaying anxieties may take a little more time, though in the long run it may save the time and energy otherwise consumed in evasions, arguments and even prosecutions. In any case, easing anxiety will result in a gain for the health authority in co-operation and perhaps even in appreciation. We cannot now go into the methods of easing anxiety except to say that negative statements such as "the needle won't hurt" or "the herd of cattle was not worth much anyway" provide little real comfort. In some manner the trust of the person about to suffer must be gained. It may help to let him air his grievance till it loses its poignancy.

There are a number of other reasons, besides fear, for opposition to health programs. Hostility may be aroused first by fear but there are people in whom hostility is aroused simply by the imposition of a regulation and especially by a show of authority. I am sure that many of us unwittingly arouse hostility in others by an unintentionally pre-emptory manner. On the other hand we may antagonize certain people by an ingratiating manner. The first question to ask ourselves when we meet hostility is "What was wrong with my approach?" or even better "What was wrong with my feeling?" If we ourselves were anxiously anticipating trouble or were determined to show the so-and-so that he couldn't get away with it we no doubt precipitated the crisis.

Dealing with fears requires breadth of understanding, dealing with hostility requires serenity of mind, but dealing with indifference requires great resources of imagination. How to strike a spark of response? It may be the most difficult task of all and will frequently be given up in favour of coercion.

The second application of understanding that we mentioned was directly to influence attitudes and feelings which affect development, health and efficiency. The situation that immediately comes to mind is the pre-natal clinic or any other setting for Maternal and Child Care activities. It should not be necessary to dwell on the desirability of allaying the anxieties of the new mother or of the old one for that matter. The multipara may not have the same anxieties as the primipara but she may have some peculiar to herself. Anxiety may have many causes from simple physical fear to fears of inability to function as a mother, or others even more "irrational". Anxiety may be overshadowed by feelings of guilt, particularly guilt on account of a subjective lack of maternal feeling or of desire to have the child. On the other hand the mother's attitude may be one of almost pure resentment.

A resentful mother who continues to be resentful will certainly have a rejected child. If there is anything to the theory outlined in the WHO monograph "Maternal Care and Mental Health", which is widely accepted to-day, such a child will very probably show a personality disorder of significant

degree later in life. There are, of course, many mothers who start out in pregnancy with a resentment of a situation which they consider to be either inconvenient or undesirable for some reason. During nine months of living with a pregnancy most mothers will probably come to accept it and even to anticipate the arrival of the child. If this transition from resentment to acceptance is not taking place the health worker should make some attempt to assist.

To be of help the medical officer or nurse must first of all detect the condition. This is best done by being alert to the little ways in which people disclose their anxiety or hostility and by providing the opportunity for the mother to open the discussion of her feelings without seeming to be prying. The art of being a good listener is well outlined in a publication of the American Public Health Association entitled "Health Supervision of Young Children". If you have not read it I hope you will do so, for it fills in what I am leaving out and much of it can be applied to general interviewing as well as in this specific situation.

We could deal at some length with the opportunities that arise in school health, industrial health and other areas for aiding development or improving efficiency by attention to emotional disturbances. A good deal of work has been done on academic retardation, absenteeism, and accident proneness, due to these causes. The question of effect of emotional stress on recovery from tuberculosis may be debatable but is one of the many possibilities that require investigation.

One further reference to the opportunities in the pre-natal clinic. There is a very good short article in the September issue of a little pamphlet named "Briefs". The article is entitled "Pregnancy—A time to teach". In previous discussions I have expressed misgivings regarding mass methods in health education and have emphasized the importance of individual and group methods undertaken at times when people have a real feeling of need and are most receptive. We have to bear in mind that people react differently to similar situations and conditions. While most expectant mothers may be very receptive at this time the deeply resentful ones will not likely be so and the over-confident ones will know it all anyhow. However, this is one of the opportunities which may be used to mould attitudes that will contribute to the health of the mother and child, and possibly of the entire family not only immediately but in the future.

This is only one of the situations in which individual teaching may be done. You are in a better position than I to know all the opportunities for individual teaching that present themselves. You may not be able to take advantage of all these opportunities but it would be well to be aware of them. I know that some of you have made use of group teaching, particularly in the pre-natal field and have been gratified with the results. It is more difficult but correspondingly more important to mould attitude than simply to transmit facts. It seems to me that group work is important because it is more economic of staff time than individual teaching and more effective than mass methods.

There are, however, indirect methods of fostering mass acceptance of health programs. Programs are introduced in a variety of settings and sooner or

later people come to feel that to co-operate in the program is the thing to do. Once the public gets the idea that one or more of the public health services may be of some help and couples with that the idea that all of the services are part of one program, then it tends to accept also those that are new or less well-known. There is nothing like being a reputable producer.

However, what I have been saying has to do with the attitude of people toward something that is done for them. It will require more understanding for them to accept the programs which depend on their doing something for themselves.

If we are going to teach we will have to decide what are the essential matters to be taught, that is what are the really important things in human development and human living. One of the things that has lingered in my memory from the days in medical school is Dr. B's red, white and blue stool. As I recall it, Dr. B. said "It doesn't matter whether the baby's stool is red, white and blue providing he is eating well, gaining weight and happy" and again "It doesn't matter whether he has a stool once a day, once a month or once a year providing etc." I recall that when our first baby was weaned no stool appeared for five days and this became the regular schedule for a while. At first we were a little alarmed. However, in every other way the baby met the criteria so we relaxed. Some friends of ours fed their baby a patent medicine to assure a daily movement and then wondered why the child looked piqued and had diarrhoea.

Sometimes it is our narrow pre-conception of what is normal that makes us blind to what is essential. My friends had been taught from childhood up that to be healthy one had to evacuate at least once a day. This pre-occupation with a rule out-weighed their own observation that the child was not thriving on the routine. Even professional people sometimes lose sight of the end to be attained in their devotion to the means of attaining it.

Technical training can be a narrowing influence rather than a broadening one. When a nurse or social worker whom I don't know very well says a certain home is a "good" one I don't know whether she means that it is clean, that the children are well-fed, that the discipline is strict, that discipline is non-existent, that there is a TV set or that the household is filled with true affection. Health people should remember the description of a certain hospital nursery "absolutely sterile both physically and emotionally". Are we like Martha "busy and troubled about many things" and neglecting the things that are essential?

No discussion of the "human side" would be complete without some reference to staff who, we sometimes forget, are also human. Anything which we may say about anxiety, fear, frustration, conflict, guilt, hostility or any other human reaction may apply to staff at some time or other. One universal human need is the need for acceptance, recognition and approval though some people don't recognize it in others. In too many organizations the problem of status is constantly the main issue though it would never be mentioned openly. Many of the arguments and tensions that arise are due not so much to the actual issues involved as to the person who sponsors them. Frequently we take the opposite side in an argument not because the other person's reasons are un-

sound but because we don't like his attitude. In reporting and in the evaluation of work we may be on the defensive lest our work should be considered unimportant.

I must say I am envious of the person who can go along doing his job well for the satisfaction that it gives him without being too concerned whether he gets credit for it or not. On the other hand, we must not expect this kind of attitude from our colleagues for it is a rare quality in professional people, and we must be realistic enough as well as fair enough to give recognition and credit to every individual for his or her effort. It should be mentioned that the staff should remember that the boss needs recognition too. Sometimes that is what makes him throw his weight around.

If each of us were to list the qualities which we consider most desirable in a colleague or an assistant, how much agreement do you suppose we would find? A friend of mine who has been an employer in industry for some years has told me that, when he first started out, he listed desirable qualities in the following order: first ability, then stability, then integrity, and almost as an afterthought, loyalty. After some years he has reversed the order to read loyalty, integrity, stability and ability. This ranking of qualities may be open to argument but it reflects a change in the scale of values of one man who has been through difficult times.

Studies in the field of industrial hygiene have indicated that many of the improvements made in working conditions have increased efficiency not so much because of improvements in comfort and ease of operation, but because they were simply changes in a too familiar pattern and also because they were indications that management was interested in the employees. Probably the activities of most public health agencies are not so routinized as to require change simply for the sake of change, but no agency can afford to take its staff too much for granted. The proper treatment of people, whether staff or clients, is not a luxury, it is an absolute necessity.

This has been a rather discursive discourse and has left many loose ends. To attempt to tie in some of the loose ends I would like to make the following observations:

One essential in working with people, if we hope to get a satisfactory response, is good communication. This means not only understanding the other person's words but the other person's meaning. The word "mountain" does not have the same meaning for the person who has climbed one as for the person who has never seen one. We cannot live through the other person's experiences but if we listen to him we can get a glimmer of what he has in mind. On the other hand when we communicate with others are we making our meaning clear, not only in our own words but in terms that the other individual in the light of his experience and present frame of mind will interpret as we intend? This is one good reason for listening to another person for awhile before expressing an opinion.

This brings us back again to the topic of "anxiety". A little observation of our own reactions to other people will soon reveal that we are frequently precipitated into ill-considered statements or actions by our own anxiety. It is not at all unusual to feel oneself to be "on the spot". It is quite obvious

that this may occur when we are faced with criticism or open hostility. However, it may also be our response to people who come for help. When we are faced with people who are themselves anxious we may feel an urgency to answer their problems in some way or other, even though we may half realize at the time that the answer we are giving is not really very good. Those who are particularly prone to this type of reaction live in a perpetual state of emergency, and as the man says, they should do something about it. The very attempt to understand another person, which we commonly describe as "good listening" promotes good interpersonal relationships and good health.

A feature of human activity that we frequently overlook in dealing with adults is the learning process. How frequently do we say "Well I told you so and so" or "Why didn't you do what I told you?" Very often we are justified in being exasperated that our words have had no effect. However, there are times when instead of dismissing an employee or a client as hopeless we might be rewarded by spending a little time in teaching. The learning process requires motivation, freedom from emotional blocks and variable amounts of time. If we can in any way provide these conditions the results may be gratifying.

It seems to me that the most important human quality is the capacity for growth and that the greatest tragedy is the arrest or distortion of growth. If this is true of the human being as a biological organism it is even more true of him as a person. He proceeds by stages. Biological growth reaches a peak and then in a sense remains arrested and in a sense declines. Psychological growth goes on longer but eventually declines. Spiritual growth, offers the prospect, I believe, of continuing indefinitely. If this is so then I should think that our greatest privilege is to grow and our greatest responsibility as well as privilege is to help others to grow. This is the greatest contribution that one can make to the life of another.

FORTY-FIFTH ANNUAL MEETING
CANADIAN PUBLIC HEALTH ASSOCIATION

Planning for the forty-fifth annual meeting of the Canadian Public Health Association and the Ontario Public Health Association is well advanced. Meetings will be held in Toronto on May 27–29 at the King Edward Hotel under the Presidency of Dr. L. A. Pequegnat, D.P.H., Medical Officer of Health, Toronto.

Multiple Admissions to Hospital[1]

MILTON I. ROEMER, M.D. AND GLYN W. MYERS[2]

THE relatively high rate of hospital admissions under the Saskatchewan Hospital Services Plan has been an object of study for some years. The effects of insurance, removing economic barriers to hospital care, are obvious. Prepayment everywhere has increased the utilization of both hospital and medical services, in fulfilment of previously unmet needs. But beyond this, are there other factors? Why, for example, are there striking differences in admission rates among different localities within Saskatchewan or other provinces or nations covered with hospitalization insurance?

In 1954, we studied this problem in Saskatchewan by selecting, among some 360 localities on which separate rates are available, the 50 with the highest hospital admission rates and the 50 with the lowest rates. We compared the demographic characteristics and the hospitalization experience of these two sets of areas and we found:

"Briefly, in the high hospitalization areas there tends to be a more rural population, at low density and including more large families. The value of their farm land is less per acre but, so far as we can tell, their per capita income is about the same as persons in low hospitalization areas. They tend to live at greater distances from large cities. They are served by a greater supply of hospital beds proportional to population but a lesser supply of physicians. The physicians tend to be of lower age levels. Patients tend to be admitted to hospital for conditions of lesser seriousness and proportionately more of a medical than a surgical nature. There also tends to be a greater proportion of persons with two or more admissions to hospital per year." (1)

The influence of the last factor mentioned, the repeated hospital admissions of the same patient in a year was felt to warrant further study. It had been found that in the low hospitalization areas, some 17% of all admissions constituted repeated (second, third, fourth, or even fifth or greater) admissions of the same persons within the year. In the high hospitalization areas, repeated admissions were 28% of the total in the year of study (1952).

Moreover, the proportion of patients with repeated admissions in the high hospitalization areas was increasingly greater than in the low hospitalization areas, as the number of re-admissions increased. Thus, the ratios between admission rates in the two sets of areas were as follows:

Number of times admitted in 1952	Patients per 1,000 Population		Ratio of high rates to low rates
	High areas	Low areas	
Total	224.8	122.9	1.8 : 1
1	167.2	103.5	1.6 : 1
2	39.8	15.5	2.6 : 1
3	11.8	2.8	4.2 : 1
4	3.7	0.7	5.3 : 1
5 or more	2.3	0.4	5.8 : 1

[1]Presented at the forty-fourth annual meeting of the Canadian Public Health Association held in the Admiral Beatty Hotel, Saint John, New Brunswick, May 29–31, 1956.

[2]Saskatchewan Department of Public Health, Regina, Saskatchewan.

It is apparent that repeated admissions of patients in a single year contribute heavily to the high hospitalization rates in certain areas. The present study aims to examine this problem a little more closely.

Method of Study

A more reliable analysis of multiple hospital admissions could be made, it was believed, by examining the experience not simply in selected areas of Saskatchewan but in the province as a whole. Moreover, the effects of repetitions would be more evident by taking as the field of study a five-year span, rather than a single year. We set out, therefore, to study multiple admissions under the Saskatchewan Hospital Services Plan during the period 1950–54 inclusive.

With some 165,000 admissions per year to analyze we were confronted with some limitations. During a five-year period many young ladies get married, so that their identification as SHSP beneficiaries changes. Many young persons, both male and female, pass the threshold of 18 years of age or 21 years of age (if students) in a five-year period, so that their SHSP status changes from that of dependents to primary beneficiaries. A third difficulty was presented by the time available in our machine tabulation staff. As a result, three limitations had to be introduced into our study:

(1) It applies only to males, among whom marriage does not alter the surname.
(2) It examines only those males who were already 21 years of age in the earliest year of study, 1950; thus they were born in 1928 or earlier years.
(3) It describes primarily the experience over a five-year period of males born in 1928 or earlier who were admitted to hospital at least once in a base year, taken as 1954. Thus, the repeated admissions during 1950–54 of persons hospitalized at least once in 1954 are analyzed, but any male who might have had several admissions between 1950 and 1953, but none in 1954 (by reason of death, departure, or good health) is missed.

Our basic study group, therefore, are those males born in 1928 or earlier years who in 1954 were admitted to hospitals under the Saskatchewan Hospital Services Plan at least once. These numbered 27,746 individuals.

Findings

Among the 27,746 patients in our study group, there were in 1954 admissions[3] to hospital 37,858 times.[4] Thus, in that single year there were 10,112 second, third, or higher repeated admissions or about 27% of the total.

General

During the five-year study period, 1950–54, these 27,746 patients experienced 72,196 hospital admissions. Of the 27,746 patients in the study group, however, 11,009 received hospital care only once during the five years. These were relatively healthy men. The remaining 16,737 patients experienced 61,187

[3]The term "admissions" in this paper actually represents discharges from hospitals during the period of study.

[4]This figure differs slightly from that appearing in the Annual Report of The Saskatchewan Hospital Services Plan 1954, due primarily to slight differences in the calculation of age of patients.

periods of hospital care in the five years, or an average of almost four admissions each. These were presumably a less robust group of men. The basic findings on these multiple admissions are given in Table I.

If we examine the data in Table I, we find that the hospital-repeaters experienced admissions in substantial volume throughout each of the previous four years. There were 6,553 cases among them in 1950, rising gradually to 11,598

TABLE I.—MULTIPLE HOSPITAL ADMISSIONS: CASES AND DAYS OF HOSPITAL CARE AMONG MALE BENEFICIARIES, BORN 1928 OR EARLIER, WHO WERE DISCHARGED IN 1954, BY NUMBER OF ADMISSIONS DURING 1950–54.

Number of Times in Hospital 1950-1954	Number of 1954 Male Patients Over 25 Years of Age*	Number of Discharges** from Hospital Experienced by 1954 Patients in that Year and in Preceding Four Years											
		Total		1954		1953		1952		1951		1950	
		Cases	Days	Cases	Days	Cases	Days	Cases	Days	Cases	Days	Cases	Days
Total	27,746	72,196	1,041,644	37,858	552,391	11,598	170,338	8,787	119,909	7,400	109,679	6,553	89,327
1	11,009	11,009	134,826	11,009	134,826								
2	6,930	13,860	185,135	8,799	125,298	1,694	21,309	1,251	12,995	1,060	13,699	1,056	11,834
3	3,926	11,778	168,723	5,796	87,789	2,016	29,900	1,509	18,570	1,305	18,105	1,152	14,361
4	2,192	8,768	129,880	3,699	58,919	1,753	24,762	1,244	16,987	1,083	17,661	989	11,551
5	1,327	6,635	106,705	2,516	42,450	1,410	21,423	1,096	15,946	882	14,222	731	12,664
6	749	4,494	73,943	1,548	27,003	1,028	17,646	737	10,832	623	10,171	558	8,291
7	487	3,409	54,133	1,149	20,109	752	12,374	601	9,180	478	6,375	429	6,095
8	341	2,728	43,053	851	14,535	683	10,609	481	7,329	376	5,672	337	4,908
9	207	1,863	29,893	556	9,590	404	5,998	343	5,347	308	4,860	252	4,098
10+	578	7,652	115,353	1,935	31,872	1,858	26,317	1,525	22,723	1,285	18,916	1,049	15,525

* Based on discharged cases and therefore excludes patients in hospital at the year-end who had not experienced a previous discharge from hospital in 1954.

** Including deaths in hospital.

cases in 1953. (This rise in the number of repeated admissions may be partly expected from the natural history of disease, but is principally due to the fact that the study group consists solely of persons hospitalized in 1954 and omits those patients in 1950 to 1953 who were not hospitalized in 1954.) In 1954, the hospital-repeaters absorbed 26,849 out of the 37,858 admissions in the study group that year.

The heavy impact of the hospital-repeaters on the over-all utilization of hospital care is revealed by considering the days of care used by them in comparison with the single-admission patients. Thus, over the five-year period, the 11,009 individuals with only one admission used 134,826 days or 12.2 days per individual. By contrast, the 16,737 individuals with two or more admissions used 906,818 days of hospital care or 54.2 days per individual. Putting it another way we can say that 40% of the individuals hospitalized in 1954 were a healthy segment who utilized only 13% of the total hospital days of this group over the past five years. Whereas, 60% of these 1954 patients were less healthy and utilized 87% of the total hospital days in the five years.

By summating one- and two-admission individuals as a somewhat healthy group, the contrast becomes more striking. Thus, we find that 17,939 individuals or 65% of the total 1954 patients utilized 319,961 hospital days or 31% of the total days, while the more sickly 35% of the 1954 patients utilized 69% of the total days over the five-year period.

Still another reflection of the impact of the hospital repeaters on the total hospital service is to consider what the volume of hospital care might have been, if there had been no repetition of admission of the same patient during the five-year period. This can be estimated by distributing the 27,746 patients in 1954 over the five-year period in the same proportion as admissions occurred. Deriving this from the data in Table I, one would find the following:

Year	Cases among 1954 Patients	Estimated Patients
Total	72,196	27,746
1950	6,553	2,519
1951	7,400	2,844
1952	8,787	3,377
1953	11,598	4,457
1954	37,858	14,549

Thus, if no patient were admitted to hospital more than once in five years, the total number of patients in 1954 in the demographic group under study would have been only 14,549—a reduction by over 47% from the actual number of 27,746. In the five-year period, on this basis, there would have been a total of five times 14,549 or 72,745 persons hospitalized once each. The fact is, however, that in the 1950–54 period there were 185,622 hospital admissions in this age-sex group. Thus, it may be concluded that 61% of the total admissions in the five-year period were constituted by patients admitted a second, third, fourth, or higher time. Only 39% of admissions were referable to the non-repeaters and the initial admission of the repeaters.

The total covered SHSP population of males born prior to 1928 numbered in 1954 some 229,652 persons. If we relate the estimate of 72,745 persons hospitalized once or more over the five-year period to this population base, it is found that only 32% of the population account for all the hospital service provided. This numbered 2,738,946 days of care in the five years. Thus 68% of the population in the age-sex group under study did not use the hospital at all in five years. Perhaps, from this vantage point, there is under-utilization rather than over-utilization of hospital services—at least by a substantial majority of the community.

Length of Stay

It appears that repeated hospital admissions are not mainly for trivial conditions. As Table II indicates, the average length of stay tends to be greater among the hospital repeaters, in rough proportion to the extent of re-admission. Patients with only one hospital admission in the five-year period averaged

TABLE II

AVERAGE LENGTH OF HOSPITAL STAY: DAYS OF STAY AMONG 1954 MALE PATIENTS BORN 1928 OR EARLIER, BY NUMBER OF ADMISSIONS DURING 1950-54

No. of times in Hospital 1950-54	Average days of Stay per Discharge				
	1954	1953	1952	1951	1950
All Cases	14.6	14.7	13.6	14.8	13.6
1	12.2				
2	14.2	12.6	10.4	12.9	11.2
3	15.1	14.8	12.3	13.9	12.5
4	15.9	14.1	13.7	16.3	11.7
5	16.9	15.2	14.5	16.1	17.3
6	17.4	17.2	14.7	16.3	14.9
7	17.5	16.5	15.3	13.3	14.2
8	17.1	15.5	15.2	15.1	14.6
9	17.2	14.8	15.6	15.8	16.3
10+	16.5	14.2	14.9	14.7	14.8

12.2 days per stay in 1954, while the repeaters averaged up to 17.5 days per stay in the group with seven admissions.

Place of Residence

To what extent are repeated hospital admissions associated with an urban or rural place of residence? Previous studies have shown hospital admission rates in Saskatchewan to be lowest in the cities by a wide margin, followed by increasing rates in the rural areas, and in the towns and villages in that order (2). In the study group, the same relationships were found, as follows:

Place of residence	Hospital admissions per 1,000, 1954
All places	165
Cities	130
Rural areas	163
Towns and villages over 1,000 population	204
Towns and villages under 1,000 population	210

As reflected in Table III, the differential among these rates is contributed to heavily by repeated hospital admissions. Thus, in the cities, with the lowest

TABLE III.—PLACE OF RESIDENCE: HOSPITALIZATION DURING 1950–54 OF 1954 MALE PATIENTS BORN 1928 OR EARLIER, BY PLACE OF RESIDENCE AND NUMBER OF ADMISSIONS.

No. of Times in Hospital 1950–1954	Total			Distribution by Residence*											
				Cities			Towns & Villages over 1,000			Towns & Villages under 1,000			Rural		
	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care
	Number of Patients, Discharged Cases and Days of Care														
Total	27,746	72,196	1,041,644	6,026	13,814	262,270	2,342	6,622	95,239	5,155	15,205	212,681	14,223	36,555	471,454
1	11,009	11,009	134,826	2,787	2,787	43,680	886	886	9,886	1,785	1,785	22,222	5,551	5,551	59,038
2	6,930	13,860	185,135	1,500	3,000	53,783	527	1,054	15,574	1,241	2,482	33,473	3,662	7,324	82,305
3	3,926	11,778	168,723	751	2,253	42,265	356	1,068	14,852	759	2,277	31,128	2,060	6,180	80,478
4	2,192	8,768	129,880	385	1,540	34,447	200	800	11,395	482	1,928	26,264	1,125	4,500	57,774
5	1,327	6,635	106,705	220	1,100	24,400	124	620	10,813	308	1,540	21,598	675	3,375	49,894
6	749	4,494	73,943	143	858	19,692	76	456	7,285	160	960	14,139	370	2,220	32,827
7	487	3,409	54,133	73	511	11,046	53	371	5,788	111	777	13,186	250	1,750	24,113
8	341	2,728	43,053	63	504	9,356	27	216	3,132	83	664	10,155	168	1,344	20,410
9	207	1,863	29,893	22	198	4,103	27	243	4,132	59	531	7,233	99	891	14,425
10+	578	7,652	115,353	82	1,063	19,498	66	908	12,382	167	2,261	33,283	263	3,420	50,190
	Percentage Distribution														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	39.7	15.3	12.9	46.2	20.2	16.7	37.8	13.4	10.4	34.6	11.7	10.4	39.0	15.2	12.5
2	25.0	19.2	17.8	24.9	21.7	20.5	22.5	15.9	16.3	24.1	16.3	15.7	25.7	20.0	17.5
3	14.1	16.3	16.2	12.5	16.3	16.1	15.2	16.1	15.6	14.7	15.0	14.6	14.5	16.9	17.1
4	7.9	12.1	12.5	6.4	11.1	13.1	8.5	12.1	12.0	9.4	12.7	12.4	7.9	12.3	12.2
5	4.8	9.2	10.2	3.6	8.0	9.3	5.3	9.4	11.4	6.0	10.1	10.2	4.7	9.2	10.6
6	2.7	6.2	7.1	2.4	6.2	7.5	3.2	6.9	7.6	3.1	6.3	6.6	2.6	6.1	7.0
7	1.8	4.7	5.2	1.2	3.7	4.2	2.3	5.6	6.1	2.2	5.1	6.2	1.8	4.8	5.1
8	1.2	3.8	4.1	1.0	3.7	3.6	1.2	3.2	3.3	1.6	4.4	4.8	1.2	3.7	4.3
9	0.7	2.6	2.9	0.4	1.4	1.6	1.2	3.7	4.3	1.1	3.5	3.4	0.7	2.4	3.1
10+	2.1	10.6	11.1	1.4	7.7	7.4	2.8	13.7	13.0	3.2	14.9	15.7	1.9	9.4	10.6

* Residence as of the date of payment of 1954 hospitalisation tax.

over-all hospital admission rates, 46.2% of the 1954 patients had no previous hospital admission in the five-year period. This was true of only 39% of rural patients, 37.8% of the larger town and village patients, and 34.6% of the smaller town and village patients.

In the cities, moreover, the single-admission cases accounted for 20.2% of the admissions and 16.7% of the days among 1954 patients in the five-year period, while in the smaller towns and villages they accounted for only 11.7% of the cases and 10.4% of the days. In other words, the hospital repeaters accounted for 79.8% of all hospital admissions in the five years among 1954 patients from cities, but they constituted 88.3% of such admissions among the smaller town and village dwellers. Thus, the impact of the repeated admission was proportionately greater in the localities with higher over-all hospital

utilization rates. They contribute appreciably to the general differential in rates between urban and rural places.

The greater average length of stay, observed to apply to higher hospital repeaters in general, is found to occur in each type of urban or rural place. In Table IV, it is seen that the single-admission patients have shorter average

TABLE IV

RESIDENCE AND LENGTH OF STAY: AVERAGE DAYS OF STAY IN 1954 OF MALE PATIENTS BORN 1928 OR EARLIER, BY PLACE OF RESIDENCE AND NUMBER OF ADMISSIONS DURING 1950–54

No. of times in Hospital 1950–54	Total	Distribution by Residence*			
		Cities	Towns & Villages over 1,000	Towns & Villages under 1,000	Rural
Total	14.6	18.8	15.7	14.6	12.8
1	12.2	15.7	11.2	12.4	10.6
2	14.2	18.9	16.6	15.0	11.8
3	15.1	19.2	16.7	14.1	13.9
4	15.9	23.6	16.8	14.5	13.9
5	16.9	23.5	19.2	14.4	15.6
6	17.4	24.0	19.4	15.5	15.4
7	17.5	23.4	17.1	20.6	14.7
8	17.1	20.7	15.1	15.8	16.7
9	17.2	24.1	20.8	14.1	17.1
10+	16.5	21.4	18.3	17.1	14.4

*Residence as of the date of payment of 1954 hospitalization tax.

lengths of stay in all four types of residence area than the repeaters. A peak of 24.1 days per hospital stay is found among city residents admitted nine times in the five-year period. The shortest duration of stay, 10.6 days, on the other hand, occurs among single-admission patients from rural areas.

TABLE V.—AGE LEVEL: HOSPITALIZATION IN 1954 OF MALE PATIENTS BORN 1928 OR EARLIER, BY AGE GROUP AND NUMBER OF ADMISSIONS DURING 1950–54.

No. of Times in Hospital 1950 - 1954	Total			Distribution by Marital Status								
				Single			Married			Wid., Div., & Sep.		
	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care
	Percentage Distribution											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	40.2	29.8	26.5	40.0	28.6	26.0	40.4	30.1	27.2	38.2	27.7	21.0
2	25.8	24.1	23.4	24.7	22.9	21.7	26.3	24.7	24.2	22.8	19.4	20.1
3	14.4	15.9	16.8	13.7	15.5	18.7	14.5	16.0	15.9	14.7	14.7	20.7
4	7.7	9.6	10.3	8.3	10.6	12.0	7.5	9.4	10.1	7.8	11.2	8.6
5	4.6	6.4	7.6	4.8	6.7	6.3	4.4	6.3	7.6	6.0	7.9	9.4
6	2.2	3.6	4.0	2.2	3.8	3.1	2.2	3.5	4.3	3.1	3.9	4.0
7	1.8	3.2	3.5	1.7	2.7	2.5	1.8	3.2	3.6	2.1	4.3	5.2
8	1.1	2.1	2.3	1.3	1.9	2.6	1.1	2.0	2.1	1.6	3.0	3.9
9	0.6	1.4	1.5	0.8	1.6	2.0	0.5	1.3	1.2	1.3	2.6	2.7
10+	1.6	3.9	4.1	2.5	5.7	5.1	1.3	3.5	3.8	2.4	5.3	4.4
	Per 1,000 Covered Population											
Total	120.9	163.3	2,141.3	117.2	163.9	2,708.5	119.8	160.6	1,952.8	146.1	201.2	3,456.6
1	48.6	48.6	566.9	46.8	46.8	703.7	48.4	48.4	532.0	55.8	55.8	726.4
2	31.2	39.3	500.1	29.0	37.6	587.0	31.5	39.6	471.6	33.3	39.0	696.2
3	17.4	25.9	359.7	16.1	25.5	506.1	17.4	25.7	310.1	21.5	29.6	713.6
4	9.3	15.8	221.4	9.7	17.3	325.4	9.0	15.0	198.0	11.4	22.5	297.2
5	5.6	10.5	161.8	5.7	10.9	171.7	5.3	10.1	149.1	8.7	15.8	324.9
6	2.7	5.8	86.6	2.5	6.2	83.6	2.6	5.6	83.7	4.5	7.8	137.2
7	2.1	5.3	75.5	2.0	4.5	66.6	2.1	5.2	70.0	3.1	8.8	180.4
8	1.4	3.4	49.8	1.5	3.2	70.8	1.3	3.3	40.5	2.4	6.1	133.6
9	0.7	2.3	31.6	1.0	2.6	54.2	0.6	2.1	23.4	1.9	5.2	94.1
10+	1.9	6.4	87.9	2.9	9.3	139.4	1.6	5.6	74.4	3.5	10.6	153.0

* Age at date of last discharge from hospital in 1954.

Age Level

With advancing age, it is widely recognized that both the frequency and average duration of hospital stay increase. But how much of this increase is contributed by patients with repeated admissions? Table V indicates that the impact of repeated admissions on the total volume of hospital services is progressively greater with advancing years. In the 25–44 year age group, patients with one admission in the five-year period constituted 51.2% of the individuals and used 34.7% of the days of care in 1954. By contrast, in the age group 70 years of age and over, the single admission patients were only 26.7% of the total and used only 19.5% of the 1954 days of care. Thus, 65.3% of the days of care among the younger men were contributed by hospital repeaters, while among older men the repeaters contributed 80.5% of the total days. For the middle-age years, the impact is in-between these two extremes. It is evident that the chronic disorders associated with advancing age must cause a great many repeated hospital admissions.

When average length of stay by age-level is tabulated, as in Table VI, a divergence is found from the general tendency observed for the study group

TABLE VI

AGE LEVEL AND LENGTH OF STAY: AVERAGE DAYS OF STAY IN 1954 OF MALE PATIENTS BORN 1928 OR EARLIER, BY AGE GROUP AND NUMBER OF ADMISSIONS DURING 1950–54

No. of times in Hospital 1950–54	Total	Distribution by Age*			
		25–44	45–64	65–69	70+
Total	14.6	9.3	13.1	16.9	21.4
1	12.2	7.7	11.7	15.4	23.8
2	14.2	9.9	12.7	16.3	22.5
3	15.1	9.5	13.9	18.6	20.6
4	15.9	9.7	14.1	17.7	20.9
5	16.9	13.4	15.4	16.0	20.2
6	17.4	15.1	14.8	16.2	20.9
7	17.5	11.8	14.3	18.7	21.9
8	17.1	15.3	14.6	13.7	20.5
9	17.2	14.7	13.6	21.0	19.4
10+	16.5	10.9	13.8	18.4	18.6

*Age as of date of discharge from hospital in 1954

as a whole. Under age 65 years, the length of stay tends to be greater with increasing numbers of admissions in the five-year period. Over age 65 years, however, this trend is not seen, and the duration of stay seems to bear no consistent relationship to the number of repeated admissions. The meaning of this is not clear; it should not obscure the greater length of stay in the older years, however, for both patients with single admissions and with multiple admissions.

Marital Status

Previous Saskatchewan studies have shown higher hospital admission rates among single, widowed, and divorced persons than among the married. To be meaningful, such comparisons must be adjusted for age level, since a state of widowhood or divorce or separation would usually be associated with an older age level. In Table VII comparisons are made within the age-bracket

45–64 years. It may be observed that the admission rates per 1000, and especially the days of care per 1000, are lower for married persons than for bachelors or for those previously but not currently married.

TABLE VII.—Marital Status: Hospitalization in 1954 of Male Patients 45–64 Years* of Age, by Marital Status and Number of Admissions During 1950–54.

No. of Times in Hospital 1950–1954	Total			Distribution by Age*											
				25–44			45–64			65–69			70+		
	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care	Patients	Discharged Cases	Days of Care
	Percentage Distribution														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	39.7	29.1	24.4	51.2	41.8	34.7	40.2	29.8	26.5	31.5	21.4	19.6	26.7	17.5	19.5
2	25.0	23.2	22.7	26.0	26.9	28.6	25.8	24.1	23.4	24.2	21.2	20.5	22.6	19.0	20.0
3	14.1	15.3	15.9	11.5	13.7	14.0	14.4	15.9	16.8	16.1	16.5	18.2	16.5	15.9	15.3
4	7.9	9.8	10.7	5.1	6.7	7.0	7.7	9.6	10.3	9.9	11.9	12.5	11.2	12.4	12.1
5	4.8	6.6	7.7	2.4	3.7	5.4	4.6	6.4	7.6	7.0	9.2	8.6	7.3	9.0	8.6
6	2.7	4.1	4.9	1.5	2.2	3.6	2.2	3.6	4.0	4.0	5.6	5.4	4.5	6.1	6.0
7	1.8	3.0	3.6	0.7	1.3	1.7	1.8	3.2	3.5	2.2	3.7	4.1	3.1	4.4	4.5
8	1.2	2.3	2.6	0.6	1.2	1.9	1.1	2.1	2.3	1.2	2.2	1.8	2.3	3.7	3.5
9	0.7	1.5	1.7	0.3	0.5	0.8	0.6	1.4	1.5	0.9	1.6	2.0	1.5	2.5	2.3
10+	2.1	5.1	5.8	0.7	2.0	2.3	1.6	3.9	4.1	3.0	6.7	7.3	4.3	9.5	8.2
	Per 1,000 Covered Population														
Total	120.8	164.8	2,485.3	80.9	99.0	919.7	120.9	163.3	2,141.3	173.0	254.8	4,302.6	265.1	405.3	8,662.4
1	47.9	47.9	587.1	41.4	41.4	319.1	48.6	48.6	566.9	54.5	54.5	841.9	70.9	70.9	1,689.6
2	30.2	38.3	565.6	21.1	26.6	263.4	31.2	39.3	500.1	41.8	54.0	882.9	59.9	77.2	1,735.6
3	17.1	25.2	382.3	9.3	13.5	128.3	17.4	25.9	359.7	27.9	42.1	783.1	43.7	64.4	1,324.2
4	9.5	16.1	256.5	4.2	6.7	64.5	9.3	15.8	221.4	17.0	30.2	536.1	29.6	50.0	1,044.3
5	5.8	11.0	184.8	1.9	3.7	49.5	5.6	10.5	161.8	12.2	23.3	372.2	19.5	36.7	741.1
6	3.3	6.8	117.6	1.2	2.2	33.5	2.7	5.8	86.6	7.0	14.4	232.3	11.9	24.7	510.3
7	2.1	5.0	87.6	0.5	1.3	15.4	2.1	5.3	75.5	3.7	9.4	175.6	8.1	17.9	392.3
8	1.5	3.7	63.3	0.5	1.2	17.6	1.4	3.4	49.8	2.1	5.6	76.8	6.1	14.9	304.9
9	0.9	2.4	41.7	0.2	0.5	7.2	0.7	2.3	31.6	1.6	4.1	85.2	4.0	10.3	200.6
10+	2.5	8.4	138.6	0.6	1.9	21.2	1.9	6.4	87.9	5.2	17.2	316.5	11.4	38.3	781.5

* Age at date of discharge from hospital in 1954.

A study of the percentage distributions will show that repeated admissions contribute significantly to these differentials. Thus, among married men in this 45–64 year age-bracket, patients admitted once or twice in the five-year period accounted for 51.4% of the total days of care in 1954. Put the other way, patients admitted three times or more accounted for 48.6% of the total days of care. By contrast, among single men, those admitted three times or more in the five-year period accounted for 52.3% of the total days of care in 1954; and among widowed, divorced, or separated men, those with three or more admissions accounted for 58.9% of the total days of care. While the tables are not reproduced here, substantially the same relationships are observed according to marital status in other age brackets. It would seem that being married provides some protection against repeated hospital admissions.

TABLE VIII

Marital Status and Length of Stay: Average Days of Stay in 1954 of Male Patients 45–64 Years of Age, by Marital Status and Number of Admissions During 1950–54

No. of times in Hospital 1950–54	Total	Distribution by Marital Status		
		Single	Married	Wid., Div., Sep.
Total	13.1	16.5	12.2	17.2
1	11.7	15.0	11.0	13.0
2	12.7	15.6	11.9	17.8
3	13.9	19.9	12.0	24.1
4	14.1	18.8	13.2	13.2
5	15.4	15.7	14.8	20.5
6	14.8	13.4	14.8	17.6
7	14.3	14.8	13.6	20.6
8	14.6	22.4	12.4	21.7
9	13.6	20.7	11.2	18.1
10+	13.8	15.0	13.4	14.4

In Table VIII, the average length of stay in the age-bracket 45–64 years is tabulated according to number of admissions during the five-year period. It is evident that married men tend to have shorter average lengths of stay than either bachelors or the widowed, divorced, or separated group both among the single-admission patients and the repeaters. With greater numbers of repeated admissions, however, there does not seem to be any consistent change in length of stay for any of the marital categories.

Diagnoses

An examination of the hospital repeaters according to diagnosis is difficult statistically, because any patient admitted in the base year, 1954, may have been admitted previously for the same or for some other disease. In Table IX,

TABLE IX.—DIAGNOSIS: PERCENTAGE DISTRIBUTION OF CASES IN 1954 OF MALE PATIENTS BORN 1928 OR EARLIER, BY LAST DIAGNOSIS IN 1954 AND PREVIOUS DIAGNOSES DURING 1950–54.

Primary Diagnosis*	Patients**	Percentage Distribution According to Number of Times in Hospital 1950–1954								
		2	3	4	5	6	7	8	9	10+
Total	100.0	41.4	23.5	13.1	7.9	4.5	2.9	2.0	1.2	3.5
Appendicitis	100.0	59.7	23.2	8.6	4.8	1.4	0.3	1.0	0.7	0.3
Acute Pharyngitis and Tonsillitis and Hypertrophy of Tonsils and Adenoids	100.0	58.6	24.3	10.8	1.9	2.2	1.1	0.4	-	0.7
Hernia of Abdominal Cavity	100.0	55.3	24.5	10.3	5.2	2.7	0.4	0.6	0.6	0.4
Diseases of Bones and Other Organs of Movement	100.0	49.9	23.7	11.6	5.6	3.5	1.6	1.6	0.9	1.6
Accidents, Poisonings, and Violence	100.0	49.1	25.8	11.2	5.4	2.6	2.2	1.6	0.6	1.5
Boil, Abscess, Cellulitis and Other Skin Infections	100.0	49.0	25.3	12.6	5.1	2.4	2.4	2.0	-	1.2
Diseases of Veins	100.0	47.4	24.2	12.6	5.9	3.2	2.0	0.5	1.0	3.2
Diseases of Gallbladder and Bile Ducts	100.0	45.3	24.9	11.7	7.5	3.1	2.1	1.8	1.0	2.6
Pneumonia	100.0	44.6	24.3	13.0	7.3	4.5	1.6	1.6	1.2	1.9
Influenza	100.0	43.7	20.8	15.7	7.2	3.1	3.5	1.6	0.6	3.8
Benign Neoplasms and Neoplasms of Unspecified Nature	100.0	43.7	27.1	10.9	9.9	4.2	2.1	0.5	-	1.6
Diseases of Genital Organs	100.0	42.9	26.7	12.5	7.8	4.9	1.9	1.1	0.3	1.9
Diseases of Stomach and Duodenum, except Cancer	100.0	41.8	24.7	14.2	7.9	4.9	2.9	1.0	1.2	1.4
Arthritis and Rheumatism, except Rheumatic Fever	100.0	38.1	24.8	14.4	8.2	4.1	2.9	2.8	1.5	3.2
Bronchitis	100.0	37.0	20.0	14.7	9.2	5.5	4.8	2.5	1.8	4.5
Vascular Lesions Affecting Central Nervous System	100.0	35.9	24.4	15.0	9.7	5.5	3.2	1.8	1.0	3.5
Arteriosclerotic and Degenerative Heart Disease	100.0	33.7	22.9	14.4	9.2	6.5	4.2	2.9	2.0	4.2
Hypertensive Disease	100.0	30.6	23.9	16.9	9.4	4.7	5.5	3.5	0.8	4.7
Allergic Disorders	100.0	29.1	16.9	11.4	9.1	7.0	5.2	4.9	3.7	12.7
Malignant Neoplasms, Including Neoplasms of Lymphatic and Haematopoietic Tissues	100.0	28.8	20.1	17.0	14.0	6.4	3.5	3.4	2.0	4.8
All Other	100.0	39.6	22.8	13.0	8.3	4.8	3.3	2.2	1.4	4.6

* For last discharge from hospital in 1954.
** Excluding patients with only one admission in the five-year period.

however, patients are tabulated according to the diagnosis for their last hospital discharge in 1954. The number of previous admissions encountered by the 16,737 persons with such multiple admissions is distributed by percentages according to each diagnostic category.

It will be observed that for the 1954 patients with acute diagnoses, like appendicitis, acute tonsillitis, or abdominal hernia, the degree of repetition of admission was small. Over 50% of such patients had altogether only two admissions in the five-year period. On the other hand, for 1954 patients with chronic diagnoses, like malignant neoplasms, allergic disorders, hypertension, and arteriosclerotic heart disease, the picture is very different. For patients

with such disorders only 33% or less had so few as two admissions in the five-year period, and 67% had three admissions or more. The high point of chronicity applies to patients with allergic disorders, among whom 12.7% had ten admissions or more during the five-year period. Ten or more admissions, moreover, applied to over 5% of the patients with diagnoses in 1954 of malignant neoplasms, hypertension, bronchitis, and arteriosclerotic heart disease. These findings suggest that repeated hospital admissions are not mainly for minor episodes of illness that come along, but rather for serious chronic disease, lasting for many years and subject to acute exacerbations. The hypochondriac, with changing labels for his many ailments, apparently does not figure prominently in the picture of multiple hospital admissions.

In Table X, there is general confirmation of this reasoning. In this table, the precise diagnoses for which the 1954 hospital repeaters were admitted in previous years are tabulated. While all sorts of previous diagnoses apply for

TABLE X.—PREVIOUS DIAGNOSES: NUMBER OF ADMISSIONS AMONG 1954 MALE PATIENTS BORN 1928 OR EARLIER, BY LAST DIAGNOSIS IN 1954 AND PREVIOUS DIAGNOSES DURING 1950–54.

List Nos.	Primary Diagnosis for Last Discharge from Hospital in 1954	No. of Patients Previously Hospitalized since Jan 1 1950	Total	Number of Previous Periods of Hospital Care Between January 1, 1950 and Last Discharge from Hospital in 1954, According to Primary Diagnosis															
				C50	C25	C12	C35	C31	C42	C46	C37	C47	C27	C20	C32	C39	C14	C30	Others
	Total	16,737	44,450	3,919	2,879	2,036	2,600	2,139	2,072	1,952	1,849	856	959	645	1,165	919	1,575	1,269	15,416
C50	Accidents, Poisonings and Violence	1,649	3,549	931	106	67	193	140	112	153	98	104	77	25	81	53	51	116	1,242
C25	Arteriosclerotic and Degenerative Heart Disease	1,139	3,518	151	1,116	44	108	144	138	115	66	31	50	55	104	68	68	74	1,186
C12	Malignant Neoplasms, Including Neoplasms of Lymphatic and Haematopoietic Tissues	940	3,039	114	93	1,214	114	84	139	88	59	26	45	28	37	36	35	56	871
C35	Diseases of Stomach and Duodenum, except Cancer	938	2,232	144	58	37	797	88	72	70	63	33	43	12	33	55	23	47	670
C31	Pneumonia	799	1,887	151	75	58	94	320	62	66	59	32	33	24	87	32	67	85	662
C42	Diseases of Genital Organs	741	1,732	126	88	46	74	67	380	68	54	20	34	17	34	32	20	43	648
C46	Arthritis and Rheumatism, except Rheumatic Fever	682	1,874	173	88	33	68	70	80	480	49	50	30	21	44	27	51	59	550
C37	Hernia of Abdominal Cavity	479	880	92	28	9	52	47	57	34	116	20	20	12	14	26	27	25	313
C47	Diseases of Bones and Other Organs of Movement	431	954	141	23	7	34	35	30	71	16	173	16	4	13	16	4	27	344
C27	Diseases of Veins	405	941	72	35	18	48	41	34	36	26	14	160	9	17	25	22	29	355
C20	Vascular Lesions Affecting Central Nervous System	401	1,130	82	82	27	32	51	46	35	12	8	14	156	40	10	17	24	494
C32	Bronchitis	400	1,246	87	58	47	61	155	39	58	19	11	13	16	163	11	54	71	381
C39	Diseases of Gallbladder & Bile Ducts	386	910	65	48	20	67	32	22	25	28	4	22	3	19	239	18	15	283
C14	Allergic Disorders	385	1,645	60	64	6	27	100	34	24	16	6	19	11	95	17	760	34	382
C30	Influenza	318	817	82	45	7	45	65	30	38	14	13	20	3	38	19	15	78	305
	All Others	6,644	18,086	1,448	897	416	786	708	797	591	354	311	363	249	356	253	343	486	9,728

each of the first fifteen diagnostic groups in 1954, it is apparent that in almost all categories the chief cause of previous admission in the five-year period was the same as the 1954 cause. Thus, for example, among the 1,139 hospital repeaters with arteriosclerotic heart disease in 1954, there were 3,518 hospital admissions in the five-year period. Of these, the largest segment by far, 1,116 admissions, were also for arteriosclerotic heart disease. The same applies, for example, to the 1954 patients with arthritis; among these 682 individuals, there were 1,874 admissions in the five-year period, out of which the very largest segment were the 480 previous admissions for arthritis. The only exception is for patients with a 1954 diagnosis of influenza, among whom previous admissions for accidents exceeded slightly those for influenza.

To those concerned with the problem of accident control and the concept of the accident-prone individual, Table X contains data of interest. Perhaps accidental trauma should be considered a chronic disease, for among the 1,649 individuals admitted to hospital in 1954 for "accidents, poisonings, and

violence" there had been 3,549 admissions during the five-year period. Much the largest cause of these previous admissions was also accidents. It should not be surprising, perhaps, that the second cause of previous admissions was accidents among the 1954 patients with diagnoses of orthopedic disorders like arthritis and diseases of bones. These data would suggest that a certain selected segment of the population is subject to repeated accidents. The extent to which this is due to their psychological make-up, their physical status, their occupation, or their particular social environment is another question.

Are surgical operations, one may ask, associated strongly with repeated hospital admissions? The answer is not simple. From Table XI one may con-

TABLE XI

SURGICAL OPERATIONS: NUMBER AND RATE OF SURGICAL OPERATIONS AMONG 1954 MALE PATIENTS BORN 1928 OR EARLIER, BY NUMBER OF ADMISSIONS DURING 1950-54

No. of times in Hospital 1950–1954	No. of 1954 Male Patients Over 25 Years of Age	No. of Hospital Discharges 1950–1954	Surgical Operations, 1950–1954		
			Number*	Surgical Operations Per Patient	Per cent of 1950–1954 Discharged Cases
Total	27,746	72,196	21,167	0.8	29.3
1	11,009	11,009	4,186	0.4	38.0
2	6,930	13,860	4,732	0.7	34.1
3	3,926	11,778	3,545	0.9	30.1
4	2,192	8,768	2,464	1.1	28.1
5	1,327	6,635	1,810	1.4	27.3
6	749	4,494	1,114	1.5	24.8
7	487	3,409	785	1.6	23.0
8	341	2,728	652	1.9	23.9
9	207	1,863	440	2.1	23.6
10+	578	7,652	1,439	2.5	18.8

*Primary Operations only

clude that with each additional admission in a five-year period, the likelihood of a surgical operation during that hospital stay declines. Thus, in 38% of admissions of patients hospitalized only once in the five years, surgery is performed; by contrast, operations are done in only 18.8% of admissions among patients hospitalized ten or more times. On the other hand, it is also evident from Table XI that, with increasing hospitalization, the likelihood of a patient eventually undergoing surgery increases. Thus, by the time a patient is admitted four times, he is likely to have had one surgical operation; and by the ninth admission, he is likely to have had 2.1 operations done.

SUMMARY AND CONCLUSIONS

This study of multiple hospital admissions of Saskatchewan males born in 1928 and earlier, who were hospitalized in 1954, suggests that the minority of the population who have repeated bouts of hospital care use a very high proportion of the community's hospital resources. This heavy incidence of hospital and medical care on an unfortunate fraction of the population in any one year, or indeed any space of years, has, of course, been recognized for a long time (3). It has been, in a sense, the theoretical foundation on which programs of health insurance have been built. The present study discloses

that even among the sick fraction of the population there is an especially sick sub-fraction who account for over half the hospital services given.

In Saskatchewan, there are approximately 200 hospital admissions per 1,000 persons per year—or a ratio of one out of five. Thus, if hospital admissions were distributed evenly, one might theoretically expect that in the course of five years each person would be hospitalized once. The facts are, however, that certain persons are hospitalized many times, some only once, and the majority not at all.

It is a challenge to public health and hospital administration to isolate that minority segment who account for a disproportionately high share of the hospital admissions and hospital days. If they can be identified, perhaps health control efforts could be concentrated on them.

From this study, some of the characteristics of the hospital-repeaters can be defined. In the prairie setting of Saskatchewan, at least, they seem to be predominantly residents of the smaller towns and villages, rather than the large cities. Perhaps this is due mainly to the concentrations of aged persons in these places and perhaps poor housing and difficulties in getting medical care at home play a role. The hospital repeaters are, indeed, more frequently old persons in any place of residence, who not only are more subject to chronic disease but whose home and family situation may be less satisfactory. They are, moreover, more often lonely persons—that is, bachelors, widowers, or divorcees—as distinguished from married individuals living with a spouse. They are persons predominantly with serious chronic disorders—heart disease, cancer, bronchial asthma and bronchitis, arthritis, cerebro-vascular disease, non-infectious disease of the gastro-intestinal and the genital organs, etc. Small part is played by the hypochondriac with changing ailments about whom we hear much complaint. They are persons whose repeated admissions are associated with progressively longer periods of hospital stay and eventually, after three admissions, with the likelihood of a surgical operation.

The epidemiological significance of these findings is easy enough to state, but extremely difficult to apply. It means that if we wish to make inroads on the causes of high hospital utilization, and large hospital expenditures, efforts should be concentrated on these hospital repeaters. It means more and more attention required on the effective management in the home and office of the chronic, degenerative diseases. It means more and more attention to the aged. It means more and more attention to the housing and living conditions of people. It suggests the need for more prepayment of medical services, more home-care programs, more health education, and more research on methods of primary prevention of the chronic diseases.

Within the administrative bailiwick of hospitalization insurance, much attention is being given to methods of reducing so-called "excessive" hospital utilization. There is much talk of "abuse" of the hospital by patients and doctors, and a common remedy proposed is the imposition of "deterrent fees". Such fees are proposed sometimes to discourage hospital admission for services that could be handled on an out-patient basis. Deterrent fees are often euphemistically called "co-insurance", when in fact, to the extent that they contribute to the hospital bill, they are really no-insurance.

Does this study shed any light on this problem? It suggests that a major share of hospital admissions are referable to the repeaters. One can hardly say that the patient who is hospitalized, usually for some acute condition, once in five years is abusing the privilege. Why then should he be deterred by a non-insured fee? An undeterred admission, moreover, can hasten the early detection and prompt treatment of any illness. On the other hand, if he is a hospital-repeater, a frequent user of hospitals, he is likely to be a sufferer from chronic disease. If he is asked to pay a deterrent charge—such as a share of the cost of second or higher admissions in a year—then the chronically ill would bear a disproportionately large share of the over-all community costs of hospital service. This would vitiate the very purpose of hospitalization insurance, which is designed to spread the risks over the sick and the well alike.

Deterrent fees, of course, might reduce the volume of hospital service demanded. They would also reduce the size of any hospital insurance tax required, by spreading that much less of the total cost on an insurance basis. But their effect can only be interpreted as an assault on the principle of community sharing of the costs of hospital care, for both acute illness and chronic illness. There may, indeed, be unnecessary hospital admissions of both acute and chronic patients, but an effective attack on this problem requires a rational and systematic policy of hospital admissions and discharges, rather than passing the cost along to the patient. It is the doctor who admits and discharges patients, and it is the medical profession as a whole which must face this challenge.

The problem of repeated hospital admissions will doubtless increase in the years ahead, as our population ages and persons with chronic disorders are kept alive. Future scientific developments for the effective treatment or prevention of acute disorders may mean that our hospitals will more and more become places for treatment of the hard-core of repeaters, with chronic disease, whom science has been unable to cure. Let us hope that ways will be found to assure these patients the best that science and humanity can offer, whether it is in a private home or a community hospital.

REFERENCES

1. Roth, F. B., Acker, M. S., Roemer, M. I., and Myers, G. W. Canad. J. Pub. Health, 1955, *46*: 303.
2. Myers, Glyn W. Canad. J. Pub. Health, 1953, *44*: 43.
3. Falk, I. S., Klem, Margaret C., and Sinai, Nathan. *The Incidence of Illness and the Receipt and Costs of Medical Care among Representative Families*, Chicago: University of Chicago Press (Committee on the Costs of Medical Care), 1933.

Maternal Nutrition and Perinatal Mortality[1]

JEAN F. WEBB,[2] M.D., D.P.H.

A great deal of evidence points to the tremendous influence that environmental factors have on the success of pregnancy, the health of the mother and the survival of her infant. Because the most important of these factors, family income, housing, nutrition and medical care are inter-related, it is difficult to study them individually or to judge their relative importance. It is obvious that as health workers we cannot accept responsibility for, nor expect to change by ourselves, many of the adverse factors such as low income or poor housing. It is not necessary to emphasize the value to a successful pregnancy of early and continuing medical care. It is worthwhile to remind ourselves from time to time of the profound influence of maternal nutrition on the course of pregnancy.

There are certain complications of pregnancy which contribute very frequently to foetal and neonatal loss. Anything which decreases the incidence and severity of these complications will reduce perinatal mortality. Some of these are: maternal complications, toxaemia, premature labour, anaemia (due to nutritional deficiency or maternal haemorrhage) rickets and general malnutrition (undernutrition or overnutrition). Some of the infant complications are: prematurity, anaemia, congenital abnormality and poor development and low vitality. The latter leave the infant more vulnerable to the trauma of birth and to the infection hazard of the neonatal period.

Good food during pregnancy has been considered of importance to the health of both mother and baby. Not until recent years, however, have attempts been made to establish definite relationships between the nutrition of the mother and the course of her pregnancy. In the early 1940's, three important reports were published of studies of nutrition supplementation during pregnancy. One study was carried out by Ebbs and Tisdall in Toronto, the other two in Britain.

In each study expectant mothers were given nutrition supplements of varying kinds during their pregnancies. The course of their pregancies and the condition of their babies were compared with those of mothers given no supplements. The findings of the three experiments were not identical but they were similar. In one study, the supplement-fed mothers had fewer miscarriages, stillbirths and premature births. The infants of these supplement-fed mothers had fewer infections and nutrition diseases in the first six months of life than control infants. Another study showed that the women receiving supplemented diets suffered less toxaemia and had a lower proportion of premature births. The

[1]Presented at the forty-fourth annual meeting of the Canadian Public Health Association held in the Admiral Beatty Hotel, Saint John, New Brunswick, May 29–31, 1956.

[2]Chief, Child and Maternal Health Division, Department of National Health and Welfare, Ottawa, Ontario.

third study showed that there had been a reduction in stillbirths and neonatal deaths in mothers receiving the diet supplement.

About the same time Burke and Stuart at Harvard University reported their work. Their study evaluated the diets of mothers during pregnancy and compared the quality of their diets with the course of pregnancy and the condition of their infants at birth. It was found that stillbirths, neonatal deaths and premature births occurred much more frequently in the group of women on poor diets than in those on good diets. The infants of mothers who had poor diets were of smaller average weight and were shorter in length at birth. This group included the majority of infants with major congenital defects. A close relationship was shown between the protein content of the diet particularly and the development and physical condition of the infant at birth. There was a significant relationship between poor maternal diet and toxaemia.

In more recent years several other research workers have reported studies which confirm some of these findings and go on to point out other specific relationships between nutrition during pregnancy and complications. One of the most interesting is the work of Warkany who has shown, repeatedly, through animal experiments that congenital malformations can be produced by nutritional deficiencies. Pregnant rats were fed diets deficient in single nutrients such as calcium or riboflavin. The rats produced offspring with congenital malformations such as cleft palate and cleft lip. We should not conclude that these findings can be applied directly to human nutrition. However, they do suggest the importance of the mother's nutrition in the earliest weeks of pregnancy during the period of embryological development, indeed, at conception.

Both overweight and underweight are accepted as manifestations of general malnutrition. A direct relationship between maternal obesity and the increased risk of toxaemia of pregnancy is well recognized and the work of Tompkins in Philadelphia has confirmed this. In addition, however, his findings suggest that the mother who is markedly underweight at the onset of pregnancy has also a greater tendency to develop this serious complication. His studies show, as well, that premature labour occurs more frequently in mothers who are markedly underweight at the onset of pregnancy. The caloric need of expectant mothers has always been a matter of interest and sometimes of controversy. Its relationship to the mother's weight at conception has not been shown so clearly before. Advocates of extreme restriction of calories for all expectant mothers should consider these findings. A more recent study of Dieckmann has confirmed the findings of Burke and Stuart regarding the particular value of protein in the prenatal diet. Dieckmann reported a direct relationship between the protein content of the maternal diet and the condition of the infant at birth. It is seen then that the scientific evidence from a number of investigations shows that the nutrition of the expectant mother is closely related to the complications of pregnancy and the condition and development of the infant at birth, and so to the perinatal mortality rate.

In addition to this direct evidence based on controlled clinical studies, there is also indirect evidence suggesting the importance of nutrition during pregnancy. One of these pieces of evidence is a study by Baird of Aberdeen. By carefully analyzing stillbirth rates in England and Scotland he has shown

that in the 1930's the stillbirth rate was strikingly related to unemployment and began to decline with reduction in unemployment. The acceleration of this decline coincided exactly with the introduction during the war years of an enlightened food policy with special priority supplies for expectant or nursing mothers. The improvement affected every age group and every parity almost equally. The only wartime change likely to affect these results appreciably was improvement in diet of the poorer sections of the community. It certainly could not be attributed to improved housing, or improved medical care under the existing emergency wartime conditions.

These studies have brought out several points. The course of pregnancy can be influenced favourably by an improved diet during pregnancy. No single nutrient has been shown to be beneficial by itself but protein appears to be of basic importance. The nutrition of the mother at beginning of pregnancy has been shown to have an influence on the success of pregnancy and research suggests that more attention might be paid to the underweight as well as the overweight mother. It seems apparent, then, that improved nutrition is good insurance against a number of complications of pregnancy which lead to perinatal death. It is also suggested that nutrition exerts an important influence in the earliest weeks of pregnancy as well as in the final weeks.

Since we as health workers are interested in family health, one of our goals must be to achieve optimum health for prospective parents so that they enter parenthood prepared to produce and rear healthy children. When nutrition education is a part of health teaching for the adolescent, the nutrition teaching of the expectant mother will merely be a re-emphasis on information with which she is already familiar, an adaptation of good family nutrition.

We as health workers accept maternal and infant mortality rates as indices of community health status and manifest concern about them. The application of our present knowledge of the benefits of good medical care, nutrition and a healthy environment can help materially to reduce our perinatal mortality. Should we not, therefore, accept more responsibility for the health supervision of expectant mothers, and use our initiative and imagination in the development of extended programs for the preservation of maternal health? Few health programs can be more rewarding in terms of better health for both mothers and infants.

REFERENCES

Ebbs, J. H., Brown, A., Tisdall, F. F., Moyle, W. J., and Bell, M.: Canada. M.A.J., 1942, *46*: 6.

People's League of Health, Interim Report: Lancet, 1942, *II*: 10.

Balfour, M. T.: Lancet, 1944, *I*: 208.

Burke, B. S., Beal, V. A., Kirkwood, S. B., and Stuart, H. C.: Am. J. Obst. & Gynec. 1943, *46*: 38.

Burke, B. S., Harding, V. V., and Stuart, H. C.: J. Pediat., 1943, *23*: 506.

Duncan, E. H. L., Baird, D., and Thomson, A. M.: J. Obst. & Gynaec. Brit. Emp., 1952, *59*: 183.

Baird, D., Thomson, A. M., and Duncan, E. H. L.: J. Obst. & Gynaec. Brit. Emp., 1953, *60*: 17.

Baird, D., Walker, J., and Thomson, A. M.: J. Obst. & Gynaec. Brit. Emp., 1954, *61*: 433.

Warkany, J.: Pediatrics, 1951, *7*: 607.

Dieckmann, W. J.: J. Am. Dietet. A., 1951, *27*: 1046.

Tompkins, W. T., and Wiehl, D. G.: Am. J. Obst. & Gynec., 1951, *62*: 898.

Tompkins, W. T., Wiehl, D. G., and Mitchell, R. McN.: Am. J. Obst. & Gynec., 1955, *69*: 114.

Securing Correction of Defects in Restaurant Sanitation[1]

DR. C. G. MORE[2]

RESTAURANT control constitutes a large part of the routine work of all health departments, large and small. The problem of securing correction of defects is one with which the medical officer of health is concerned. Specific methods for securing corrections are probably quite similar in all health departments. The advice and instruction should be given directly to the manager or owner of the restaurant. It is of little value to direct specific recommendations to an employee except where some minor adjustment, usually the employee's technique, is concerned. These instructions should be written and clearly presented in an approved form stating the time interval allowed for compliance. A written copy of these instructions should always be retained for the records. The violation requiring correction should be notified to the head of your division who is in a position to support enforcement procedures which may have to be instituted to secure correction. Re-inspection of the restaurant concerned should be made preferably one week before the period for compliance expires and in making this inspection you should be accompanied by another sanitarian or by your medical officer of health. This re-inspection frequently hastens corrective measures. On completion of the time interval allowed for compliance a final inspection should be made and further measures taken, if necessary. In the event of non-compliance, it is proper to again consult with the person or persons directly concerned. The proprietor should be informed that it is the intention of the department to proceed with the action required to obtain correction of the defects. This action is either suspension of the restaurant license pending correction of the violation or the institution of court action by warrant and summons. The former results in closure, usually temporary, and in most situations produces immediate results. In this connection, I would offer some recommendations regarding the general mode of procedure when court action becomes necessary. The specific law and other relevant legislation, its possible weaknesses, and the record of past cases tried under the law must be studied. All facts concerning the incidents must be stated in writing, names given in full, the time of the occurrence, witnesses, and the specific violations. Before issuing any summons or warrant, always obtain authorization from your medical officer of health or the director of your division and discuss all aspects of the violation with him as well as with the department's legal adviser. If your department has no legal adviser, it is good practice to obtain the

[1]Presented at 43rd Annual Meeting, Canadian Public Health Association, Edmonton, Alberta.

[2]Medical Officer of Health, Red Deer, Alberta.

assistance of the medical officer of health or a sanitarian colleague when a formal inspection is likely to be followed by court action. Never, under any circumstances, discuss the facts of your case with others, prior to the trial. All records, evidence and exhibits must be safeguarded and should any evidence be transferred from one person to another, signed receipts obtained. After disposal by court action, all relevant records must be carefully kept as they may be valuable in future cases. Another recommendation is that you should visit the local, civil and criminal courts, for there you will benefit greatly by observing procedures which may facilitate and expedite your own court cases. The importance of the legal aspects and implications of this phase of your work cannot be over-emphasized. Health departments should never be placed in the position of having prosecutions for violations of health ordinances dismissed regularly, due to poorly prepared court presentations. Departmental efficiency can be greatly impaired if this happens.

Successful Inspection and Control

I am well aware that my remarks have covered ground with which you are familiar. I will now present recommendations that are not found in public health textbooks. My suggestions and recommendations are based on personal experience as a medical officer of health. Some of my ideas may not be acceptable. It is rather striking on examining available sanitary inspection textbooks and literature, to find that restaurant inspection and control receives very limited attention. This does not mean that restaurant inspection control is an unimportant phase of public health work. The lack of detailed instruction in textbooks suggests that actual experience in the field is the main method whereby technique of successful inspection and control of restaurant sanitation is acquired.

Training of food-handlers. Success in inspection and control of restaurants depends upon the realization that education in sanitation is a major factor. Good restaurant sanitation rests directly on each individual working in the establishment. The fact that one out of every seven workers in retail trades is a restaurant worker should not be forgotten. Bearing this in mind, I venture to suggest that our efforts of restaurant control can be improved by directing more of our energies in the education of restaurant workers, both management and employees. More local training courses are essential if all restaurant management and staff personnel are to be instructed in proper methods. These training courses are already in existence in many centres, particularly in cities, but more must be done for those employed in rural and the smaller urban restaurants, for it is here that we find that the correction of defects is required most frequently. The centre of our efforts is the education of restaurant workers. Group education is impossible, except in cities or larger urban centres and the main task of the sanitarian in many cases is the individual instruction of the restaurant workers in the proper methods for handling foods, glassware, dishes, together with instructions concerning good personal hygiene and personal appearance. Time-consuming though it may be, there is often no alternative to individual instruction.

The sanitarian himself benefits by giving such instruction to restaurant

personnel and it is an incentive to him to keep "on his toes" in so far as his knowledge of the subject is concerned. Up-to-date copies of restaurant regulations should always be kept and should always be carried. A thorough knowledge of restaurant legislation is essential and all amendments should be added to your sets of regulations as soon as they are received. One suggestion is that each restaurant owner or manager should be checked periodically to ascertain whether he has or does not have up-to-date and fully amended copies of all restaurant regulations. If these regulations are not in the management's files, a set should be made available to him immediately, and any subsequent amendments provided. Office files should always be kept complete and up-to-date. Each restaurant will have its own record file or folder and I can highly recommend the use of a "tickler file" reminder system, whereby one surveys at a glance the situation concerning one or all restaurants under his supervision. Another obligation is to keep abreast of current restaurant control literature. It is wise to study our own public health and sanitation journals regularly and to note current trends in the restaurant trade publications. Attendance at seminars and post-graduate training courses is most helpful. Attendance as an official or non-official observer at a "trade conference or convention" is most desirable and helps to convince restaurant operators that your restaurant control program is co-operative and constructive.

Public Relations. If the sanitarian has the confidence and good will of the restaurant operator, his control methods produce results. Constructive criticism, coupled with recommendations within reason, will invariably ensure the complete co-operation of the majority of restaurant operators and employees. Fairness in all your dealings will make your control program highly effective. With these attitudes it should not be necessary to resort to legal action to correct poor conditions, except in instances of flagrant noncompliance or defiance of the regulations. However, should legal action be necessary there should be no turning back. It is wise, also, to maintain close contact with other municipal officers and the municipal council as occasions may arise in the discussion of local legislation relating to restaurant control when your presence as a representative of the health department may be most helpful. Your presence at local municipal meetings enables civic bodies to obtain direct answers to sanitation problems and the proper interpretation of regulations. This creates mutual respect between civic authorities, the health department and the restaurant industry in your area. By your attendance you can certainly gain the co-operation of the industry as they realize that you have understanding of their problems. You should investigate immediately every complaint of poor restaurant conditions or inadequate food service, in addition to making your regular inspection rounds. The good restaurant operator will welcome such opportunities to find out where he has failed and will invariably take the necessary action to insure that such a complaint does not arise again. Finally, a simple word of caution, avoid overfriendliness with the management or personnel and keep your dealings on a business plane at all times. By all means, have a "cup of coffee" with the manager, but only after you have completed your inspection and written your report. Encouragement to proprietors to join their trade association should be left to the trade itself. Such associations are

most helpful in "producing self-discipline". Nevertheless, as a member of a regularly constituted health department, you should not give advice in regard to membership. "Grading" of establishments should be left entirely in the hands of restaurant associations and here again, in my opinion, you should refrain completely from discussing such matters. This should not be confused with grading by the health department which is entirely different. The former is a particular method of internal control and discipline and should be left entirely to the industry itself, for obvious reasons.

Medical Inspection of Food-handlers

My final recommendation in regard to control programs is one that I am most concerned with as medical officer of health and as a physician. Perhaps my ideas may make me unpopular with my medical colleagues. I believe that the greatest need for improvement in restaurant control lies in the application of preventive medicine. Progress is being made by sanitarians in the control and improvement of restaurant facilities, in the instruction of the personnel, in newer and better techniques in food-handling and dishwashing. Medical officers of health and practicing physicians are, in my opinion, failing in not insuring adequate standards of personal health of restaurant staffs. There is an urgent need for a complete revision of the current standards of personal health and medical inspection requirements of restaurant workers, whether they be managerial or staff employees. The best restaurant with every conceivable piece of modern equipment is not a suitable place to eat if a single waitress has unsuspected pulmonary tuberculosis or one of the dishwashing staff has recurrent boils on his forearms due to an undiagnosed diabetic condition. It is of little value in so far as adequate control measures are concerned, if a waitress of the type which we all know exists, is allowed to wander from one restaurant to another, from town to town, with no medical check whatsoever. She becomes an itinerant food-handler and her services are freely available in spite of her personal health being such as should completely exclude her from serving food to the public. The close medical control of kitchen and dining room staffs in establishments of the Armed Forces illustrates what I have in mind as a basis for future legislation of food-handlers, particularly restaurant staffs. We must direct our efforts to obtain a uniform code whereby a person so employed will undergo a pre-employment medical examination including a chest x-ray, blood test and a complete physical check-up. This pre-employment medical examination should be insisted on for all who serve food to the public and should be followed by periodic medical checks, preferably every six months or, at least, every year. The use of permits for food-handlers should be introduced and their issuance should be dependent on attendance at organized training courses in restaurant techniques and the furnishing of a certificate of the applicant's medical fitness. I am well aware of the many objections which may be raised to this proposal. Nevertheless it is my conviction that we are failing in our duty to the public and to the restaurant trade by not insisting on more adequate control methods.

Health Aspects of Welding and Allied Processes

ERNEST MASTROMATTEO,[1] M.D., D.P.H.

WELDING is the fusion of two or more metal pieces by heat. Various methods of applying heat are used: (1) gas flame, (2) electric resistance, (3) electric arc, and (4) chemical action.

Oxy-acetylene is the most common gas flame used. Hydrogen, propane, natural gas and other fuel gases may be used. Spot welding is the most common example of electric resistance welding. There are many varieties of electric arc welding. One involves the use of helium or argon as an inert gas shield around the arc; others include carbon arc welding, atomic hydrogen welding, submerged arc welding, and metal arc welding. The latter is the most common, and may be done with or without coated electrodes. Thermit welding is an example of the fourth method, i.e. chemical action between finely divided aluminum and iron oxide.

Processes allied to welding include burning, cutting, hard surfacing, spraying, soldering and brazing of metals.

Because of the wide use in industry of all these processes the matter of special hazards is important. In general, there is no evidence to show that the health or accident experience of welders as a group is higher than that of any other group of workers of similar age in the same environment. There is no doubt, however, that there are special hazards which are associated with welding processes. These hazards may be grouped as hazards from: (1) electric shock, (2) fire and explosion, (3) burns, (4) radiant energy, (5) gases and vapours, (6) fumes and dust, and (7) miscellaneous causes.

Electric Shock

Voltages required for welding are low, and may cause indifference on the part of the worker. Under certain conditions, however, these voltages are high enough to endanger life. High temperature and humidity, excessive sweating, damp clothing, and welding while standing on a wet surface or in water, are all conditions which can lead to trouble. Sometimes electric shocks, which in themselves are trivial, may cause falls producing injury.

Fire and Explosion

The danger of fire and explosion from the handling of flammable and explosive welding materials is well known. In gas welding care is needed to avoid fuel gas fires, gas explosions, and valve explosions. Safety procedures in the welding of tanks or containers, which held flammable materials are worthy of emphasis. Oxygen in the presence of organic material presents a hazard particularly in enclosed spaces.

[1]Division of Industrial Hygiene, Ontario Department of Health.

Burns

Contact with gas flames, metal splashes, sparks, newly welded parts, or with a live conductor may result in thermal burns. Scars from such burns have been described as occupational stigmata of welders. These burns are distinct from electric arc radiation burns.

Radiant Energy

When an electric arc is struck, energy is produced and some of this is radiated in the form of ultraviolet, visible light and infrared waves. Although ultraviolet and infrared waves are not visible, they do produce certain effects on body tissue. Molten metal, gas flames, and welding arcs emit copious infrared waves, but only the electric arc emits substantial amounts of ultraviolet waves.

Radiant energy emission varies with the type of arc welding, the metals being welded, the current density, the type of current, the electrodes used, and the welding technique. In general, the inert gas-shielded arc produces about twenty times more ultraviolet emission than the ordinary metal arc. This is particularly evident when aluminum and stainless steel are being welded with consumable electrode.

Ultraviolet Waves. The effect of these waves on body tissue is chiefly on the skin and the eye.

Exposure of the unprotected skin to an arc for even ten seconds can produce a burn. There is no immediate sensation and redness is slow to appear. There is individual variation in response to ultraviolet light and resistance can be built up to a degree. Repeated burning has led to the development of dermatitis in sensitized individuals. Skin tanning is produced also by exposure to ultraviolet light. Cases of radiodermatitis of the lip have been reported; these may require surgical excision. Animal experiments with ultraviolet radiation of a certain wave-length have resulted in the production of skin cancer. This experimental work has not been verified with human experience in arc welding.

Exposure of the unprotected eye to the arc produces a condition called "arc eyes". At close distance to the arc the necessary exposure is very short. A conjunctivitis with desquamation of corneal cells is produced by a photochemical reaction to the ultraviolet waves. No resistance is developed on repeated exposures, as there is with the skin. The main symptoms of "arc eyes" are: painful red eyes, photophobia, and lacrymation. The worker often states that he has a feeling of sand or grit in his eyes. Symptoms appear after a delay period of a few hours and seldom last longer than twenty-four hours. Recovery is complete without permanent or chronic effect.

Infrared Waves. These act on body tissue simply as heat. Definite evidence of injury in welders produced from infrared waves is lacking. The quantity of infrared emission from the welding arc is not high and not comparable to that near metallurgical or glass furnaces. "Glass-blowers' cataract", a condition which occurs in some glass workers, has been attributed to infrared rays, but this is disputed by some authors.

Visible Light Waves. The brightness of the visible light rays from the gas

flame or the electric arc has been blamed for changes in visual acuity, decrease in night vision, chronic conjunctivitis, and chronic blepharitis. Such effects, if they do exist, are minimal.

Gases and Vapours

Gases and vapours are both supplied and produced during welding. Some of these may present a toxic or a fire hazard. In general, under ordinary conditions the concentrations are of such low order as to be insignificant from the health viewpoint. Unusual conditions, improper handling, and accidents may occur; for this reason, it is important to know something of the potential hazards.

Oxides of Nitrogen. There are several oxides of nitrogen; the important ones from the health viewpoint are commonly called "nitrous fumes". Nitrous fumes are toxic with an insidious action. Workers may not experience immediate trouble, yet they can suffer serious illness when away from exposure. There are many reports of deaths from acute pulmonary oedema following oxy-acetylene welding. These cases generally occur when such welding is done in confined or ill-ventilated places as, for example, inside tanks or boilers. Nitrous fumes are produced from nitrogen in the atmosphere by the heat of the flame. Electric arc welding in confined places carries much less risk of trouble because such welding is done largely with shielded electrodes.

Ozone. Ozone is a very irritating gas. It is formed in small quantities by ultraviolet radiation from the electric arc. It dissociates rapidly into oxygen a few inches from the arc. Ozone has a characteristic odour which can be noticed the moment an electric welding arc is struck. It is produced in more copious amounts with inert gas-shielded welding than in other types. Although there are many reports of upper respiratory tract irritation from ozone, it does not present a serious problem in welding. These irritant effects are without permanent damage. Some workers have speculated on the possibility of synergistic action between ozone and nitrogen oxides in producing acute effects. They are produced together by the arc, and higher concentrations of ozone can be tolerated when no nitrous fumes are present.

Carbon Monoxide. Gas welding in confined or ill-ventilated places may result in the production of carbon monoxide from incomplete combustion of acetylene. Some of the deaths from gas welding in enclosed spaces attributed to carbon monoxide are more likely to have been caused by nitrous fumes. Application of hydrocarbon gases to large cold metal surfaces can produce relatively large amounts of carbon monoxide at the onset of welding. Carbonaceous coatings present a potential danger. The electric arc produces negligible amounts of carbon monoxide. Recently carbon dioxide has been introduced as an inert gas in gas-shielded arc welding. This method is said to produce significant amounts of carbon monoxide, but further study is needed.

Hydrogen Fluoride. Hydrogen fluoride or other gaseous fluorides may be produced when fluoride fluxes are used as an electrode coating or as a flux powder. Hydrogen fluoride gas is very corrosive and irritating. It is produced in small amounts and, under some conditions, may reach temporary significant

concentrations. The chief effect is irritation of the eye, nose and throat. Nosebleed has been reported following exposure to fluoride fluxes.

Trichloroethylene Decomposition. Trichloroethylene degreasers may commonly be found close to welding operations since clean metal parts are a welding prerequisite. It was found, that when inert gas-shielded arc welding is done in the presence of trichloroethylene vapour, a disagreeable odour is produced the moment the arc is struck. This is now known to be caused by a photochemical reaction brought about by the action of ultraviolet radiation on trichloroethylene vapour. Trichloroethylene is decomposed producing phosgene, trichloracetic acid, hydrochloric acid, and other acid vapour. The amount of these decomposition products can reach significantly irritating levels.

Fuel Gases. The fuel gases present a hazard chiefly from the fire and explosion viewpoint. Acetylene, propane, butane, natural gas, and manufactured gas can produce anaesthesia, but it would be extremely unlikely to encounter such levels in welding. Temporary incomplete combustion of hydrocarbon gases may result in the formation of carbon monoxide. Hydrogen, also used as a fuel gas, has no toxic effect, but its use presents an acute fire and explosion hazard.

Inert Gases. Helium and argon are used to shield the electric arc in one type of arc welding. These gases are not toxic. The only factor limiting the amount which can be inhaled is the resulting oxygen shortage. Carbon dioxide has been tried as an inert gas shield, but is not yet in widespread use.

Others. Metal surfaces, which have a coating of asphalt, paint, oil, varnish or shellac, may produce irritating aldehydes when heated.

The amount of carbon dioxide produced by the welding flame or arc does not reach toxic levels. In poorly ventilated places, however, its presence may stimulate and deepen respiration, causing greater inhalation of other materials present. The possibility of oxygen lack from welding in confined spaces has been raised, but analysis has shown that oxygen consumption by the flame or arc is quite low.

Fumes and Dusts

Fumes are freshly-formed ultramicroscopic particles of metal or mineral oxides. Dusts are larger particles. Both may be produced by the metals being welded, the welding rod, the electrode, the coating, and the flux. Fumes produced in welding are quite heterogeneous, but the main constituents are the oxides of the various elements present.

Iron. Iron fumes are the commonest fumes encountered in welding, and fortunately present no health hazard. Inhalation of excessive amounts does produce discomfort. In 1936 attention was first called to x-ray changes in the lungs of electric arc welders in Great Britain. This condition is called "siderosis". Its x-ray appearance is somewhat similar to that seen in silicosis. In siderosis, however, there is no fibrosis of lung tissue nor any impairment in lung function. It occurs in about five per cent of arc welders who have been employed ten years or more. It is occasionally seen in gas welders and in haematite miners. In many cases the x-ray signs disappear on termination of exposure.

Zinc. One of the commonest specific diseases attributable to welders is metal fume fever. Welders who have worked on galvanized metal under poor ventilation can describe the typical symptoms of chills, leg pains, headache, tightness in the chest, and fever, followed by a fall in temperature accompanied by sweating. This condition usually comes on after leaving work and may present a diagnostic problem. The worker is usually well enough to return to work the next day. The cause of this condition is believed to be a protein reaction following injury by freshly formed metal fumes to the cells lining the respiratory tract. It is seen chiefly with zinc fumes but has been described following exposure to copper and other metal fumes. On repeated exposure, workers may develop a resistance to metal fume fever. There are no serious effects except in the severest cases.

Lead. Workers engaged in the cutting of scrap metal heavily coated with lead paints have a significant exposure to lead fumes. Many solders contain a high percentage of lead. The inhalation of as little as 2 mg. daily can produce the well-known symptoms of lead intoxication. Lead is a cumulative poison and is stored in the bones in an insoluble state. Special precautions, therefore, are required for those persons engaged in welding or cutting operations involving lead.

Cadmium. Cadmium fumes are toxic and can cause irritation of the throat, bronchus, and lung. Workers may develop pulmonary oedema eight hours after exposure, and can present a diagnostic problem. Welders may mistake cadmium-plated metals for galvanized metal plate because of the similarity in their appearance.

Beryllium. Beryllium fumes are toxic and welding processes involving beryllium alloys require special precautions. Beryllium pneumonitis has been reported in one worker who welded beryllium sheets. There seems to be much individual variation in susceptibility to beryllium.

Other Metal Fumes. Copper fumes may cause metal fume fever. In addition, there are numerous reports of minor illness with fever, chills, nausea and vomiting following copper welding. Generally speaking, copper fumes are not considered toxic. Respiratory trouble from the inhalation of nickel fumes has rarely been reported. This is true for manganese fumes also. Some authors have suggested that certain reflex and nervous system changes in some welders are attributable to chronic manganese exposure. Mercury poisoning in welding is rare and has been reported in only one case. Here a mercury anti-fouling paint was present on the metal. Chromium fumes have not caused trouble in welding, but may produce temporary irritation. Vanadium is found in some alloy steels, and as a deposit in oil-fired boilers. Welding of these may give respiratory irritation from such fumes. Aluminum and titanium fumes have not given rise to trouble in welding.

Other Fumes and Dusts. There has been some speculation as to whether welding presents any risk of silicosis because rod coatings often contain silicates with some free silica. Analytical studies show relatively high amounts of silica in the fumes from these rods, but this silica is not present as free silica. There is, therefore, no risk of silicosis in welding operations. Similarly, the possibility of developing asbestosis from asbestos used in rod coatings is negligible. Chloride, bromide, and fluoride salts are used as flux powders and

in flux coatings. Fumes of these, particularly from the fluoride salts, can produce eye, nose and throat irritation of a temporary nature. Some of these salts may form gaseous compounds in welding as noted earlier. There is no evidence of the development of fluorosis in welders.

Miscellaneous Hazards

The effect of heat and excessive humidity in some welding operations has resulted in the development of heat cramps in welders. Some welding operations require the worker to assume bent or unnatural positions for long periods of time. This may cause temporary muscle stiffness. Because of awkward postures which must be assumed, cramped spaces, restriction of vision by helmets and goggles, slippery steel plates, and inhalation of fumes, one would expect an increased accident rate in welders. Such has not been found to be the case in the studies which have been made.

Since x-ray machines and gamma sources are frequently used for the inspection of welded joints, welders may suffer some radiation exposure if proper precautions are not taken in shielding and use. Another minor source of radiation exposure exists in the use of the tungsten electrode which has one to two per cent of added thorium oxide. Thorium is a weak radioactive source, and the use of thoriated electrodes in poorly ventilated places may result in a potential hazard.

Air in the presence of a welding arc is ionized. Some investigators have speculated as to the health effects of inhaling this ionized air. It has no untoward health effect.

Miscellaneous hazards might also include exposure of the welder to processes located nearby for convenience. For example, this may involve exposure to acid or caustic from cleaning baths, vapours of degreasing solvents, and sand from abrasive cleaning.

REFERENCES

1. Doig, A. T., and Duguid, L. N.: The Health of Welders, Ministry of Health and National Service, HMSO, 1951.
2. Dressen, W. C., *et al.*: The Health of Arc Welders in Steel Ship Construction, Public Health Bulletin No. 298, U.S.P.H.S. 1947.

Canadian Journal of Public Health

EDITORIAL BOARD

R. D. DEFRIES, M.D., D.P.H., *Editor*

J. T. PHAIR, M.B., D.P.H., *Associate Editor* CYNTHIA PALMER, B.A., *Editorial Assistant*

J. H. BAILLIE, M.D., D.P.H. GORDON BATES, M.D. A. E. BERRY, M.A.SC., C.E., PH.D.

J. G. CUNNINGHAM, B.A., M.B., D.P.H. C. E. DOLMAN, M.B., PH.D., D.P.H., F.R.C.P., F.R.S.C.

EDNA L. MOORE, REG.N.

G. D. PORTER, M.B. A. H. SELLERS, B.A., M.D., D.P.H.

F. O. WISHART, M.A., M.D., D.P.H. J. WYLLIE, M.A., M.D., CH.B., B.SC., D.P.H.

A PRESSING PROBLEM AND A SUGGESTION

PUBLIC health workers in Canada are indebted to Dr. G. J. Wherrett, Executive Secretary of the Canadian Tuberculosis Association, for bringing before them the pressing problem presented by the steadily increasing number of national voluntary health agencies. Dr. Wherrett addressed the forty-fourth annual meeting of the Canadian Public Health Association in Saint John, New Brunswick, last May. Few in Canada have as wide an experience as Dr. Wherrett in the work of voluntary health agencies. The success of the Canadian Tuberculosis Association is ample evidence of his leadership and his influence has been felt in the whole field of public health. He recommended to the meeting that a study of the work of our national voluntary agencies be undertaken. No one has a greater appreciation of the role of voluntary agencies in public health than has Dr. Wherrett, expressing as they do the interest of the public in health work. Facts, however, must be faced of the multiplicity of agencies with their attendant problems of staff, function and financial support. Dr. Wherrett's paper as published in this issue of the Journal merits most careful consideration. It deals primarily with national, voluntary agencies. At the annual meeting the Executive Council appointed a committee under the chairmanship of Dr. Stewart Murray to confer with Dr. Wherrett.

In the United States the report of Selskar N. Gunn and Philip S. Platt on behalf of the Committee for the Study of Voluntary Health Agencies presented, in 1945, the findings of a three-year study by a committee appointed by the National Health Council. Their findings are, in large part, applicable to our Canadian situation, particularly if local voluntary agencies are included. The report pointed out the need for "a strong central national agency, representative of the varied interest of the health movement to give future leadership and direction". Careful study of the efforts made during the past years in the United States will be most valuable in considering this problem.

Dr. Wherrett stresses the importance of the medical officer of health in the co-ordination of voluntary agencies, a fact too often overlooked. He points out that there is a need for combining the work of some agencies and that co-ordination of programs is far more important than co-ordination of fund-raising. The problem is one of great importance to every public health worker. It is a challenge, not only to the Canadian Public Health Association but to all public health agencies in Canada.

HONOURING THE RETIRING PRESIDENT OF THE ASSOCIATION

Canadian Public Health Association

Honours

Joseph A. Baudouin, M.D.
President of the Association
and
Chairman of the Executive Council
1923 - 1925

On behalf of the Officers and members of the Canadian Public Health Association, the Canadian Committee desires to express their great appreciation of the valuable services rendered by him to the Association as President and his important contributions to the advancement of public health in Canada.

FEW members of the Association know of the importance of the contribution made by the President during his term of office. Throughout the years, forty-five in number, the work of the Association, including the editing of the Journal, has been conducted without salaried officers, with the exception of two short periods when the Association appointed an executive officer to serve full-time. In a very real sense, therefore, the Association is indebted to the large number of its members who, through their contributed services, have made possible the Association. In particular, the Association is indebted to its executive officers. It is fitting that on the occasion of his retiring the President of the Association should receive formal recognition of his service. This year, Dr. Stewart Murray, Vice-president, expressed our appreciation to Dr. Arthur J. Melanson at the annual dinner during the sessions of the national meeting in Saint John last May and presented to him a Certificate of Office suitably framed. The citation reads "The Canadian Public Health Association honours Dr. A. J. Melanson, President of the Association and Chairman of the Executive Council, on behalf of the officers and members of the Canadian Public Health Association the Executive Committee express their great appreciation of the valuable services rendered by him to the Association as President and of his important contributions to the advancement of public health in Canada."

Every member will be pleased that a similar honour is being paid to our former presidents. Dr. George D. Porter is the oldest Past President. He was one of the charter members when the Association was organized in 1911 and served as treasurer for a number of years. In 1925 the Association faced difficult days and Dr. Porter served as President for three years, helping greatly to strengthen the Association.

Dr. J. A. Baudouin had the honour of serving for two years immediately preceding Dr. Porter. In all, there are twenty-two Past Presidents living, including: G. F. Amyot, Victoria; J. A. Baudouin, Montreal; Malcolm R. Bow, Edmonton; G. D. W. Cameron, Ottawa; P. S. Campbell, Halifax; R. O. Davison, Regina; R. D. Defries, Toronto; M. R. Elliott, Winnipeg; A. R. Foley, Quebec; Jean Gregoire, Quebec; Adelard Groulx, Quebec; F. W. Jackson, Ottawa; T. J. Lafreniere, Montreal; C. W. Macmillan, Montreal; Hon. James J. McCann, Ottawa; F. C. Middleton, Regina; J. A. Melanson, Saint John; Allan R. Morton, Halifax; John T. Phair, Toronto; George D. Porter, Toronto; A. Somerville, Edmonton; R. E. Wodehouse, Ottawa.

To all our Past Presidents, the Association again expresses thanks.

Erythema Nodosum and Tuberculosis in Childhood[1]

W. I. BENT,[2] M.D., D.P.H., and A. H. BARSS, M.D.

ON April 25, 1954, a five-year-old girl from a family of three children was seen with the initial complaint "red spots on the legs". The history obtained from the mother was to the effect that her daughter, previously in good health, began to complain the day before of fatigue and chills. Her temperature was taken and ranged between 99° F. and 100° F. The mother did not regard the sickness as anything unusual until the following morning when she noticed the appearance of three or four reddish spots on both lower extremities. Examination of the child was negative except for a temperature of 100° F. and several reddened indurated spots over the anterior surfaces of both lower legs. These lesions varied in size from one-quarter inch to one inch in diameter and were tender on palpation. A diagnosis of erythema nodosum was made.

On the next day, this girl's brother, age seven, became ill with a temperature and similar spots appeared on his legs. On April 30, the third child, a two-year-old boy, also developed typical erythema nodosum, the lower extremities being again involved.

With this development the members of the household were x-rayed. Examination of the three children revealed active primary infections, hilar in distribution. The father's chest x-ray revealed advanced right sided tuberculous disease with cavity formation. His sputum proved positive for tubercle bacilli. On inquiry, it was learned that the father, a mariner, had last been home about a month previously for a few days and at that time had complained of a chest cold accompanied by a persistent cough and general malaise. The three children showed positive patch tests carried out a few days after onset of illness. Two of the children had been patch-tested in school six months previously with negative results.

The subsequent course of these cases was uneventful. The skin lesions cleared up in from one to four weeks, and follow-up examinations have shown the chest lesions to have healed satisfactorily. Treatment with isoniazid and para-aminosalicylic acid was continued for approximately four months.

Discussion

For many years the condition known by such different names as peliosis rheumatica, nodal fever and erythema multiforme has puzzled the medical profession. On reviewing the literature concerning erythema nodosum in children we particularly refer to the reports of Collis, Dickie, Ernberg and Wallgren. In 1931 Collis described this condition as follows: "Erythema nodosum has all the signs of a general body reaction; it is preceded by an indefinite period of malaise which is followed by a more definite prodromal interval of some five to ten days during which the patient complains of headache, lassitude, anorexia and in some cases muscle and joint pains. Fever is usually, though not always, present during this period. The time of occurrence of eruption is very variable. Nodes sometimes come out with the fever but in certain cases their appearance is delayed for as long as

[1]Presented at the fifth annual meeting of the Canadian Public Health Association (Atlantic Branch).

[2]Divisional Medical Officer of Health, Department of Health, Nova Scotia.

two to three weeks. The lesions are characteristic appearing usually on the shins as red, raised, indurated nodules of varying size and type. They also sometimes occur on the arms and occasionally on the face and trunk. There is little or no relation between the extent of the eruption and the severity of the general symptoms. After the appearance of the nodes most cases rapidly improve. The lesions soon fade leaving a bruised discoloration and the patient may recover within a week." Although the diagnosis is only possible when the eruption occurs, Collis suspected that some attacks of erythema nodosum took place when this was so slight as to pass unnoticed.

Briefly, three divergent views have been found in the literature regarding aetiology.

Rheumatic

Following the work of MacKenzie some fifty years ago, erythema nodosum was associated with an acute rheumatic process, being supported by clinical evidence that certain cases were preceded by acute tonsillitis of streptococcal type, polyarthritis and sometimes followed by rheumatic heart disease. MacKenzie (1886) could prove only 15 per cent of his cases of erythema nodosum as having occurred coincidentally with rheumatism. Gosse (1913) found no evidence of endocarditis or chorea in any of a series of 100 cases of erythema nodosum. Feer (1926) found no definite joint involvement or endocarditis in any of his 45 cases. Landau (1927), in 130 cases of erythema nodosum in children from one to fourteen years of age, found only one having a history of a previous rheumatic infection. Wallgren, in his series of 1000 cases in children, found only two cases of erythema nodosum with rheumatic fever aetiology, so the part it plays has been overemphasized.

Specific Infectious Disease

A group of physicians (Symes, 1928; Fornara, 1930; Miescher, 1948) held that the erythema is an expression of a specific infectious disease appearing only when quite exceptional allergic conditions are present in the affected person. This view does not appear compatible with the findings of Ernberg and others. For instance, Ernberg in 1921 demonstrated that he could provoke a new attack of the disease in tuberculous subjects by the injection of tuberculin, and Rollof in 1949 likewise produced the same results with sulfathiazole. Most investigators have discarded this theory.

Tuberculous

For many years workers have called attention to the fact that certain cases of erythema nodosum are closely associated with tuberculosis. Ernberg in 1919 showed the association between early tuberculous lung lesions and erythema nodosum. Wallgren in 1926 investigated an epidemic of erythema nodosum in a girls' school which revealed a very close association of this outbreak and tuberculosis. Further investigation by Wallgren in 1931 placed beyond reasonable doubt that certain cases of erythema nodosum and tuberculosis are intimately connected. Ernberg in 1933 stated that erythema nodosum is to be regarded in general as a symptom complex of a tuberculous nature. He further stated that the tuberculous focus is in the great majority of cases in the region of the pulmonary glands and the fact makes it important to try to ascertain the source of infection.

Wallgren (1950) in his excellent review of one thousand cases in children states that erythema nodosum should be regarded as a non-specific allergic cutaneous eruption which appears especially in tuberculosis and occasionally in other infections and may possibly be provoked by non-infectious agents. "Other infections" include hemolytic streptococcal, syphilis, sarcoidosis, enterocolitis, pneumonia and rheumatic fever. "Non-infectious agents" include sulfathiazole and bromides.

Summary

Three children in the same family developed erythema nodosum within a few days of each other, and within a month from exposure to a proved open case of tuberculosis. In addition, examination of all three children revealed active primary tuberculous disease following the appearance of the erythema nodosum. The lesson to be learned is that all cases should be carefully investigated, otherwise a serious infection may be overlooked.

References

Collis, W. R.: A New Conception of the Aetiology of Erythema Nodosum. Quart. J. Med., I, 1932.
Erythema Nodosum. Brit. Med. J., 1933, II. 1162.

Dickie, L. B.: Erythema Nodosum and Tuberculosis in Children. Am. Rev. Tuberc., 26, 1932.

Ernberg, H.: Erythema Nodosum and Tuberculosis. Am. J. Diseases Children, 46, 1933.

Wallgren, Arvid J.: Erythema Nodosum and Pulmonary Tuberculosis. Lancet, 1938.
Rheumatic Erythema Nodosum. Am. J. Diseases Children, 55, 1938.
One Thousand Cases of Erythema Nodosum. Abraham Flexner Lectures Series No. 10. Tuberculosis and other Problems of Pediatrics, 1950.

ASSOCIATION NEWS

The Ontario Public Health Association Annual Meeting was held jointly with the Ontario Branch of the Canadian Institute of Sanitary Inspectors at the King Edward Hotel, Toronto, September 24–26, under the presidency of Dr. D. V. Currey, Director, St. Catharines-Lincoln Health Unit. The Minister of Health's conference for medical officers of health was held on the opening day and was addressed by the Hon. Dr. MacKinnon Phillips. Dr. P. E. Moore, Director of Indian Health Services, Department of National Health and Welfare, addressed the luncheon session on Monday and Mr. Leo Dolan, Director of the Canadian Government Travel Bureau, addressed the luncheon on Wednesday. The Rt. Rev. W. E. Bagnall, Bishop of Niagara, was the guest speaker at the annual dinner. More than 500 members were in attendance. The following officers were elected for 1957: President: Dr. D. F. Damude, 1st Vice-President: Dr. Glen T. Mitton, 2nd Vice-President: Dr. L. A. Clarke, Secretary-Treasurer: Dr. A. R. J. Boyd.

The resignation of Mrs. Joyce Howes of the central office of the Association in Toronto has been received with great regret by the Executive Committee. Mr. and Mrs. Howes are moving to Ottawa where Mr. Howes has been recently appointed to the Department of Transport. Members of various committees of the Association are well acquainted with Mrs. Howes' efficient work. As Editorial Assistant, Mrs. Howes has rendered most valuable service during the two years in which she has been a senior member of the staff. The Association extends its best wishes to Mrs. Howes.

NEWS

International

The ninth meeting of the Council of the Pan American Sanitary Organization and the eighth meeting of the Regional Committee of the World Health Organization were held in Antigua, Guatemala from September 17th to 27th with representatives of twenty-four countries. Dr. Fred L. Soper is the Director of the Pan American Sanitary Bureau. The Council adopted a budget for the PASB for 1957 of $2,400,000. This amount, together with the regional allocation of $1,400,000 from WHO and funds from the United Nations Technical Assistance program, will help finance some 150 public health programs carried out by member Governments with the collaboration of the Bureau. In addition to this, UNICEF will make substantial contributions. Fellowship awards were made during the year to 390 health workers for study abroad or attendance at seminars. The work of the Bureau includes smallpox eradication, yellow fever studies, environmental sanitation, typhus and leprosy control, work in maternal and child health, and programs in practically all other fields of public health.

Federal

The Honourable Paul Martin, Minister of National Health and Welfare, announced the appointment of three members to the Medical Council of Canada, Dr. Neil Macdonald, Windsor, Ontario; Dr. Leon Gerin-Lajoie, Montreal, P.Q.; and Dr. Joseph E. Josephson, St. John's, Newfoundland. The appointments are for a term of four years. The Medical Council of Canada is a statutory body under the Canada Medical Act and is responsible for the establishment of uniform qualifications for the practice of medicine in Canada. The Council is composed of two members from each province representing the provincial licensing body, one member from each university or incorporated medical school, three members representing the homeopathic practitioners in Canada, and three members appointed by the Governor-in-Council.

New federal health grants include a grant of $171,770 for additions to the Owen Sound General and Marine Hospital in Ontario, and $26,000 for diagnostic chest clinic service for bush camp workers in the North Bay area, Ontario, where 13,100 workers are

employed in 264 bush camps. Grants were made to the Civic and General Hospitals, Ottawa to assist in equipping glaucoma clinics. In Quebec, a grant of $95,300 was made in connection with hospital construction of the Saguenay General Hospital, Arvida. Another grant provided $6,000 in support of heart disease research at St. Luke's Hospital, Montreal. A grant of $51,000 was announced in Alberta for the Banff Mineral Springs Hospital.

Alberta

Dr. E. S. Orford Smith has resigned from the position of Medical Officer of Health in the Sturgeon Health Unit in order to take up the position as Director of the re-organized Division of Local Health Services. This brings into one division the former divisions relating to Health Units, Communicable Diseases, Health Education, Municipal Nursing, Entomology and Nutrition.

Saskatchewan

The Hon. J. Walter Erb was sworn in on July 31st as Minister of Public Health for Saskatchewan. He succeeded the Hon. T. J. Bentley, who became Minister of Social Welfare and Rehabilitation. He is a graduate in Arts and Science of the University of Manitoba (1933). Mr. Erb was a member of the staff of Luther College, Regina, but in 1946 left to operate his farm at Lang. He was first elected to the Legislature in 1948.

Dr. Murray S. Acker has been granted a leave of absence to accept an appointment with the World Health Organization. He has been assigned for a two-year project to the governments of Singapore and the Federation of Malaya commencing early in October, 1956. The WHO project will involve a survey and reorganization of hospital records systems in the two countries and the establishment of a training program for hospital records officers. After joining the Saskatchewan Department of Public Health in 1946, Dr. Acker served as personal assistant to Dr. F. D. Mott, chairman of the Health Services Planning Commission. Later he was transferred to the Weyburn–Estevan Health Region where he served as medical officer of health for two years. In 1953, he assumed full-time direction of the Research and Statistics Branch. He has also served as secretary of the Health Services Planning Commission and as a member of the University Hospital Board.

Manitoba

A one-week course for technical supervisors in the treatment of water and sewage was conducted in the latter part of September by the Public Health Engineering Bureau of the Provincial Health Department for the Department of National Defence. Army and civilian personnel from across Canada attended lectures at Winnipeg and were conducted on field trips to treatment plants in the capital city and at Brandon, Camp Shilo and Portage la Prairie. The members subsequently attended the Western Canada Water and Sewage Conference convention, Calgary.

A report, issued this fall on the latest Institute in Prenatal Education at the University of Manitoba shows a record of attendance of 27 registered nurses. These courses—planned by Dr. E. L. Peters, Director of Maternal and Child Hygiene for the Manitoba Health Department, and currently conducted by Miss Irene Cooper, Obstetrical Teaching Supervisor at the Winnipeg General Hospital—have been largely responsible for the success of the province-wide program of prenatal instruction for expectant mothers. Sponsored by Federal health grants, the institutes were begun in the spring of 1952 and have been held twice yearly (with the exception of the year 1953).

The Rural Municipality of Portage la Prairie joined the Portage Health Unit on September 1st and a Laboratory and X-Ray Unit, established in the new Hospital, commenced its work. The new unit serves four rural municipalities and the village of MacGregor and city of Portage la Prairie, with a total population of about 25,000.

Ontario

Following the trial of a two-year course of training for nurses conducted at the Metropolitan Demonstration Training School in Windsor, Ontario, in 1948, and the course of training, pioneered at the Atkinson School of Nursing at the Toronto Western Hospital, in 1950, through funds provided by the Atkinson Charitable Foundation, the Toronto General Hospital and its Wellesley Division have adopted a two-year instructional period and students will then write their examinations to qualify as registered nurses. They will not, however, receive their diplomas until they have completed a third year of training which will be devoted entirely to actual ward duty. During the third year the nurses will receive the stipend of trained nurses.

Announcement has been made by the Provincial government of Ontario of the building of a 762-bed hospital for aged persons not requiring the facilities of mental hospitals. The hospital is to be erected at Brampton, Ontario, at a cost of approximately $6,000,000.

The first drug addict clinic in Ontario has been placed in operation by the Provincial government of Ontario. It has been opened at Mimico reformatory and is part of the five-year plan of the reform institutions of the Ontario government aimed at the maximum rehabilitation of offenders of all types. The new centre is under the direction of Dr. R. G. Bell and Dr. F. H. Van Nostrand and the staff consists of Dr. S. J. Holmes, Psychiatric specialist, plus a senior departmental psychologist, junior psychologist and a social worker.

The Ontario Department of Health's displays at Ottawa's Central Canada Exhibition and the Canadian National Exhibition at Toronto featured public participation. The Ottawa booth presented tuberculosis prevention showing cultures and slides of tubercle bacilli and approximately 4,000 people were x-rayed by the Department's portable chest x-ray unit. A highlight of the Canadian National Exhibition was a free test for blood sugar. More than 1,200 received this test and 33 of those tested were above normal limits in their blood sugar content at the time they were tested. A consultative service for mothers and expectant mothers was held in the Maternal and Child Hygiene section of the booth with doctors and nurses in attendance.

The Provincial Department of Health announces the organization of two new Health Units. These are the Wentworth County Health Unit with Dr. L. M. Stuart of Hamilton as Medical Officer of Health and Director, and the Sudbury Health Unit with Dr. J. B. Cook of Sudbury as Medical Officer of Health and Director.

New Brunswick

Mr. Robert Bavin, a senior administrative official with the British National Health Service spent a week with the Department in Fredericton. His chief interest was in the field of medical and hospitalization planning. Before coming to New Brunswick he toured the western provinces as well as Nova Scotia.

On September 10 a team of nutritionists from the Federal Nutrition Division commenced a survey of food habits in areas of Madawaska and Gloucester counties. Miss Sewell and Miss Saint-Hilaire of the provincial nutrition staff will assist in this survey. Miss Pichette of the public health nursing service has already rendered valuable assistance in locating certain households in the Green River area of Madawaska where the survey started. The survey has been recommended by the Federal Division of Blindness Control to determine whether the nutritional status of the population bears any relation to the existing high incidence of blindness. Repeat surveys will be done in both of these areas next spring, when one-week dietary records will again be taken, and a medical examination given.

Mr. Jack Kaplan, B.A., Alberta, 1939 has been appointed as Clinical Psychologist at the Fredericton Mental Health Clinic. He completed a year of graduate work at the University of Minnesota and later obtained the degree of Master in Clinical Psychology at Long Island University.

Dr. John E. Sterns, York County Board of Health is enrolled in a course leading to the Diploma in Veterinary Public Health at the School of Hygiene, University of Toronto.

Mr. George J. Robichaud was appointed rehabilitation officer with the Department of Health and Social Services, effective June 1, serving the northeastern section of the province with his office in Moncton Tuberculosis Hospital.

Mr. Edmund H. Serell, rehabilitation officer in training at the McGill School of Social Work, spent the summer months with the Department. He is a graduate in Arts and Education of the University of New Brunswick.

Miss E. Harrison, nurse consultant in Venereal Disease Control and Epidemiology, Department of Public Health, Toronto, visited the Department in Fredericton.

Miss Cathryn McKenzie has been appointed as dental hygienist with the Dental Health Division. She recently graduated from the University of Toronto with honours.

Dr. Clarke Adair has resigned his position as Medical Director of the Fredericton Mental Health Clinic.

Dr. John Stanley, Medical Director of the Moncton Mental Health Clinic has been granted leave of absence for one year to pursue studies at the Children's Hospital, Montreal.

Dr. Gordon Henley, senior psychologist, has resigned from the Mental Health Division as of August 27 to take a teaching post in the University of Nebraska, and Mrs. Henley has resigned as supervisor.

Mr. John Bishop, Clinical Psychologist at the Provincial Hospital, Lancaster has been awarded a Beaverbrook Scholarship for post graduate study in England. He has been granted a year's leave of absence.

Miss Vera Hamilton has resigned from the Public Health Nursing Service to assume duties as district nurse for the New Brunswick International Paper Company, Dalhousie.

Miss Edith Dunn has joined the Public Health Nursing Service and is attached to the Bathurst office.

Books and Reports

LANDMARKS IN THE HISTORY OF HYGIENE — by Henry E. Sigerist, M.D., D.LITT., LL.D., D.SC., F.R.C.P., Research Associate in the History of Medicine, Yale University. Published by Oxford University Press, London, New York, Toronto, 1956. 78 pages. $2.00.

Public health workers will welcome the publication of the Heath Clark Lectures, in 1952, delivered at the London School of Hygiene and Tropical Medicine by Dr. Henry E. Sigerist. Dr. Sigerist needs no introduction to Canadian public health workers. He has made a lifetime study of the history of medicine, relating history with the problems of our time. He has done field work in Canada, and his survey of social medicine in Saskatchewan, was part of the field work which he has conducted in the United States, India, South Africa and the U.S.S.R.

In the series of five lectures he presented "Galen's Hygiene"; Sir John Harrington's translation of "Regimen Sanitatis Salernitanum" (of which between 500 and 1,000 editions, translations and reprints have been made); "The quest for long life in the Renaissance"; "Johanne Peter Frank, a pioneer of social medicine" and "The changing pattern of medical care".

THE DRUG ADDICT AS A PATIENT — by Marie Nyswander, M.D., Senior Supervising Psychiatrist, Post Graduate Centre for Psychotherapy. Grune & Stratton, Inc., New York, 1956, $4.50.

The author prepared this book primarily for physicians, but also for social workers, hospital administrators and probation officers. The book describes a recently advocated approach that endorses the management and treatment of the drug addict by the family physician. Dr. Nyswander believes that the present punitive approach under government control is not getting results in the face of a growing problem.

Chapter headings include Pharmacology, Physiology, Psychology, Social Pathology, Clinical Diagnosis and Withdrawal Treatment, Rehabilitation, The British Approach and Looking Forward.

THE HISTORY OF THE SCHOOL OF TROPICAL MEDICINE IN LONDON, 1899–1949 — by Sir Phillip Manson-Bahr, Memoir No. 11, London School of Hygiene, H. K. Lewis & Company, Limited, England, 1956.

The interesting story of the founding of the School of Tropical Medicine in London and its development as part of the London School of Hygiene and Tropical Medicine.

THE YEARBOOK OF MODERN NURSING—by M. Cordelia Cowan. Published by G. P. Putnam's Sons, New York. Published in Canada by McAinsh & Co., Limited, Toronto, 1956. 446 pages. $5.95.

The place of a yearbook in various professional fields is well recognized. The Yearbook of Modern Nursing records significant developments and is planned to provide for the nursing profession an outstanding publication. Representatives of all the leading nurses' organizations—national and international—have played an important part in creating this work. Faculty members of fifteen universities, nurse consultants from all levels of government are among the contributors. Nurses will welcome this means of keeping abreast of all that is transpiring in their field.